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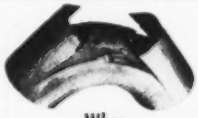

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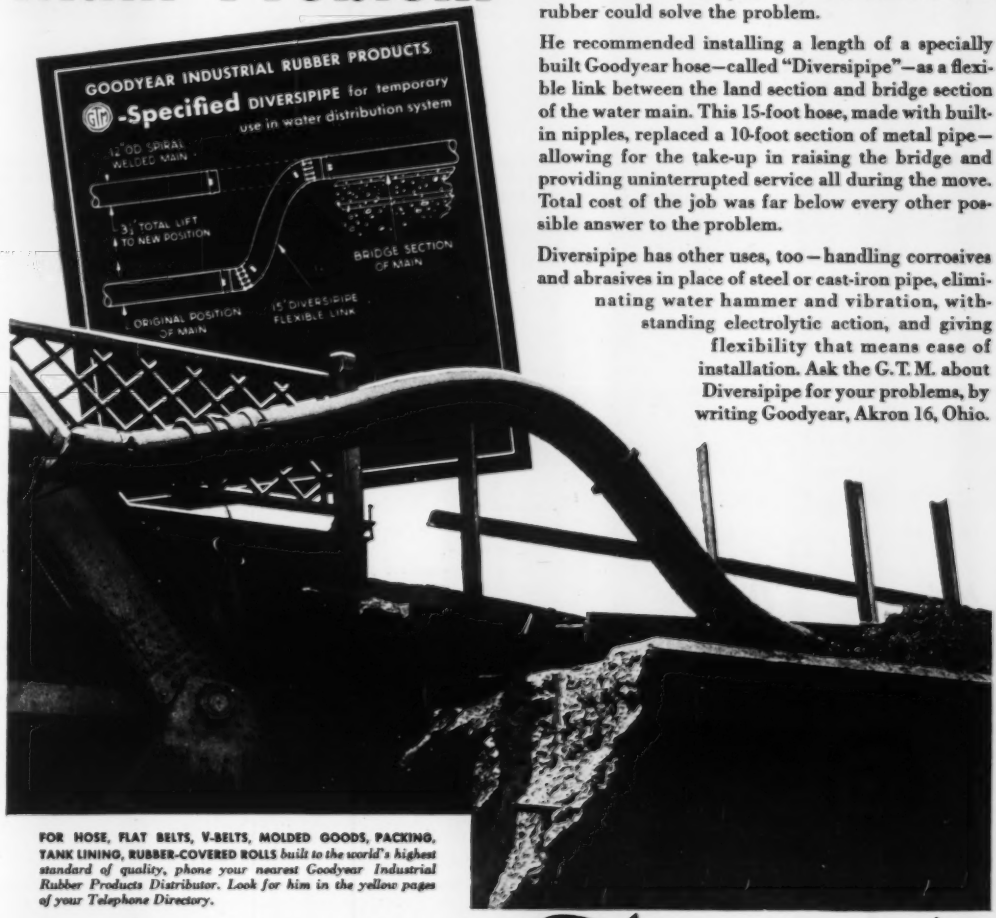
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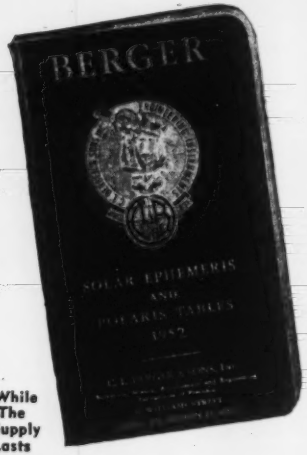

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ENGINEERING NEWS-RECORD

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Volume 148 JANUARY 17, 1952 No. 3

WALDO G. BOWMAN
Editor

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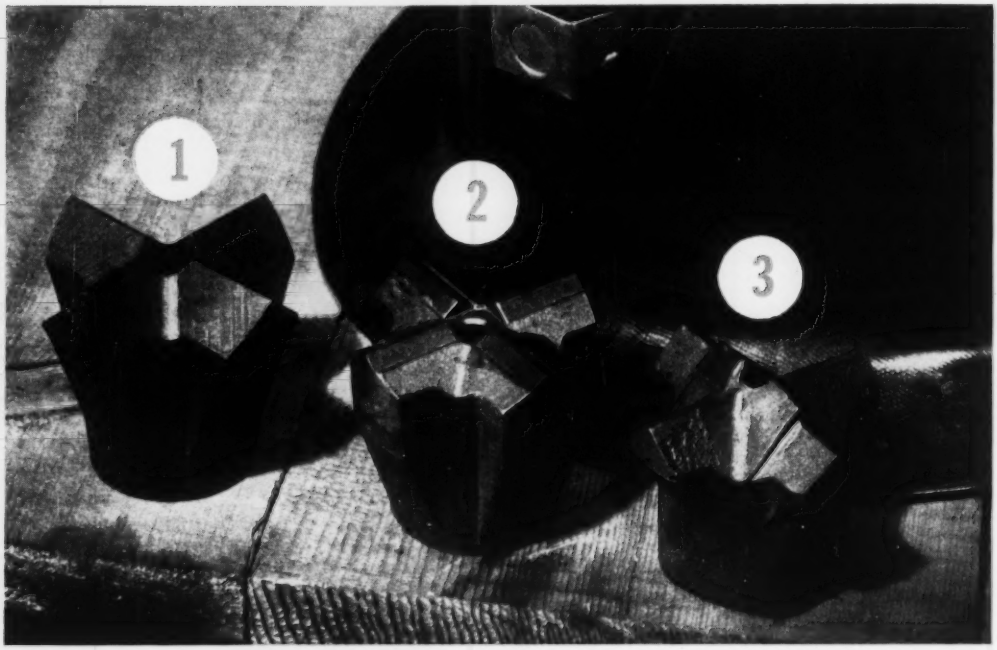

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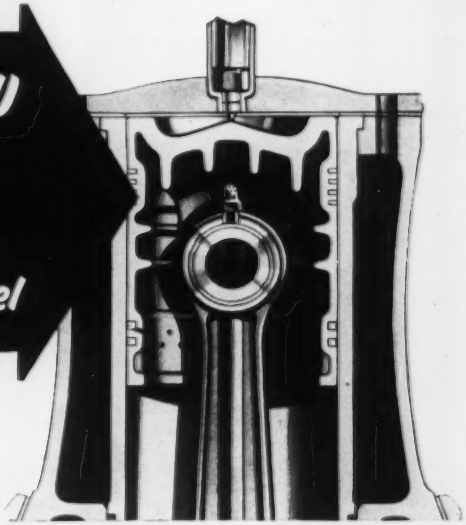

ILLUSTRATED at the right in cross section is the combustion chamber of the Murphy Diesel. Note that it is plain and open with no artificial devices to effect combustion. In operation, completely atomized liquid fuel is sprayed directly into all parts of the air charge by means of the unit injector located in the center of the combustion chamber. Since the fuel burns immediately upon injection into the incandescent air charge, combustion is controlled solely by the unit injector, which in turn is precisely controlled by the hydraulic servo-type governor. This is "true" diesel operation.

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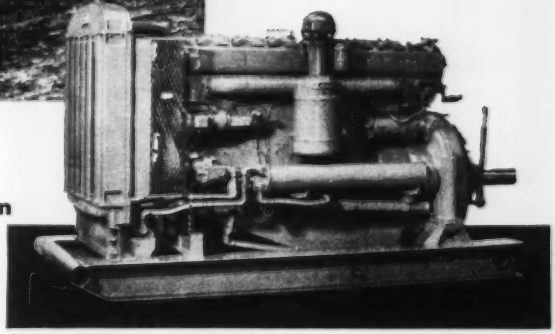
Illustrated is a 30" x 42" Pioneer jaw crusher owned by H. E. Sargent, Stillwater, Maine, and powered by a 6 cylinder Murphy Diesel. The rugged construction, fast response and operating economy of Murphy Diesels make them ideal for this type of service.



***Heavy Duty Power* for construction**

Murphy Diesel Engines and Power Units for construction, 90 to 226 H.P., 1200 and 1400 RPM. Generator Sets, 60 to 140 K.W.

209

Construction view of 10-story, 500-bed Veterans Administration Hospital, Iowa City, Iowa. Ellerbe & Co., St. Paul and Leo A. Daly Co., Omaha, architects. Lt. Col. H. K. Howell, U. S. Corps of Engineers, structural engineer. Gust K. Newberg Construction Co., Chicago, was the general contractor.

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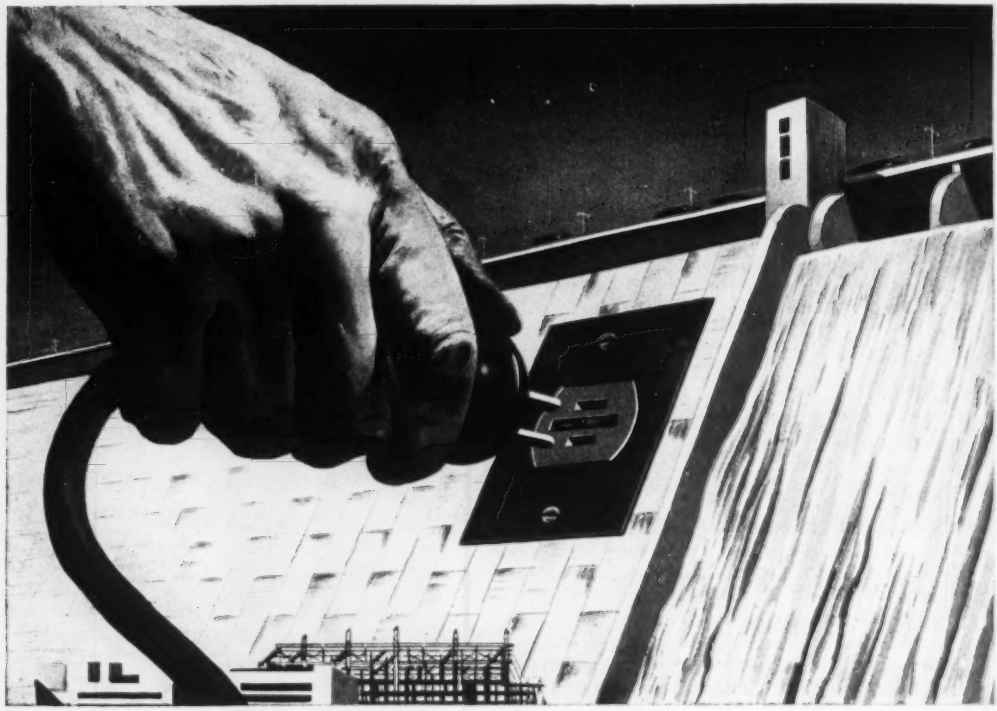

An Idea You Can Plug In Anywhere

The approach employed in solving this important construction problem —for one of the world's largest power dams—may hold an idea for you . . .

In this case, provision had to be made for a temporary but effective water stop that could be removed after the turbines and pumps were installed.

To accomplish this, the penstocks as well as pump inlet pipes were designed with hemispherical bulkheads in the up-stream sections, making it possible to install the lower sections of the penstocks during periods of high water. Also, bulkheads were incorporated in the downstream ends of the pump intake pipes, to protect the pumping plant after the reservoir was filled. For essential design freedom, adaptability and strength for a static head of 270 feet of water, as well as economy, bulkheads were made of steel plate formed shapes. This construction also permitted their easy removal by flame cutting after the pumping units had been installed.

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READER COMMENT

Prestressing symposium

Sir: In your report (ENR Nov. 29, 1951) of the Symposium on Prestressed Concrete held at the State Office Building in Albany, Nov. 17, you failed to mention that the meeting was brought about through the personal and energetic efforts of Prof. A. A. K. Booth, professor of mechanics at Rensselaer Polytechnic Institute, and president of the Hudson-Mohawk Section of ASCE. The meeting was sponsored and arranged by the ASCE chapter, and I believe that the interest and large attendance was also due in part to the backing which we gave it here at RPI.

It was also not mentioned that the morning session was devoted primarily to an illustrated lecture by Prof. J. Sterling Kinney, head of the structures division of the civil engineering department at RPI.

We are particularly interested here at RPI in the study and development of prestressed concrete and were, I believe, the first engineering school to establish a course (a graduate course) in prestressed concrete two years ago. It is taught by Professor Kinney.

It is our hope that the interest in prestressed concrete by the engineering and contracting groups in this area can be stimulated and developed by subsequent meetings of this type.

L. B. COMBS
Head, Department of
Civil Engineering
Rensselaer Polytechnic Institute
Troy, N. Y.

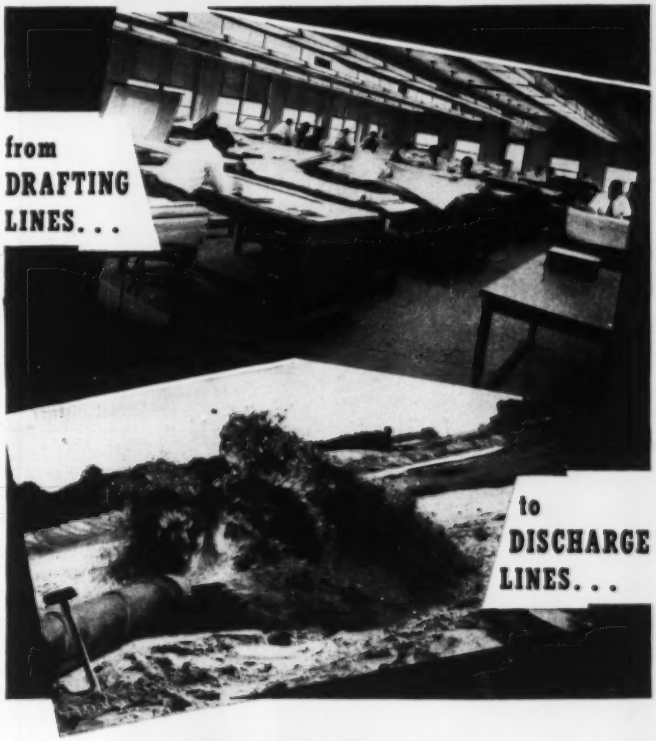
Flood control by the TVA

Sir: I have read with interest Mr. Matthes' article "How Good is Flood Control" (ENR Nov. 8, p. 30) and heartily agree with most of the principles stated therein. However, under the section, "What about the TVA," his statement, "Nevertheless, no significant flood control or flood reduction is manifest along the main river after 18 years of work, and none is claimed by TVA" is in error.

The floods of 1946, 1947, and 1948, if it had not been for regulation by reservoirs, would have been the fifth, sixth, and seventh floods of record at Chattanooga. They were reduced 10.1 ft, 12.7 ft, and 10.5 ft in stage, respectively, and the total damage averted in the three floods at this point was in excess of $36,000,000. The total damage prevented at Chattanooga alone since 1936 is close to $50,000,000.

In the section of river from Hales

(*Continued on page 10*)



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Bar to Wheeler Dam the reduction in most flood stages in recent years has been upwards of five feet, and at Savannah, Tenn., the reductions have been from one foot to 7.5 ft, and average about 5 ft.

As to the statement that no significant flood control or flood reduction is claimed by the TVA, the 1948 annual report of the Tennessee Valley Authority said in part: "The situation at Chattanooga is this: the flood of 1867, the greatest ever recorded there, crested at 57.9 ft (30 ft on the Chattanooga gage is considered to be flood stage). If this flood recurred today, uncontrolled, it would submerge the business and industrial district of the city to depths as great as 18 ft and portions of the residential district to more than 20 ft. An uncontrolled flood of this magnitude would cause in excess of $80,000,000 damage. It would not be feasible from an engineering standpoint to control such a flood through the use of levees alone.

"The TVA reservoirs alone could control a flood like that of 1867 to the extent of reducing the stage from about 58 ft to less than 45 ft, or about 13 ft. While this would avert more than $65,000,000 in potential damage, it is estimated that the actual damage caused by such a flood would be $13,500,000."

It should be emphasized again that without the reduction in stage at Chattanooga produced by TVA reservoirs, it would be physically and economically infeasible to construct levees that would protect the city completely from floods. This would seem to be significant.

JAMES S. BOWMAN
Chief Water Control Planning Eng.
Tennessee Valley Authority
Knoxville, Tenn.

Floods at Chattanooga

Sir: The phrase, "No significant flood control," that I used in commenting on the Chattanooga flood situation was the way William C. Fitts, chief counsel for the TVA, described the situation during a discussion of the subject on May 22, 1944, according to my diary. Probably a more exact statement would have been that only minor reductions have been made in flood crests at Chattanooga by flood storage reservoirs above that point.

Taking 13 ft off the top of a flood height of 58 ft is a considerable amount and would reduce the margins of the flooded area; but if flood waters in a flood equal to that of 1867 still would be 18 ft deep in Chattanooga's business district and 20 ft in some residential areas, it does not appear

(*Continued on page 14*)

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2. The Mathematical Treatment of Stability Problems and the Stability Criteria
3. Buckling of Centrally Loaded Columns by Torsion and Flexure
4. Lateral Buckling of Beams
5. Built-up Columns and Columns of Variable Stiffness
6. The Stability of Frameworks
7. The Effective Length of Compression Members in Trusses and the Stability of Rigid-frame Structures
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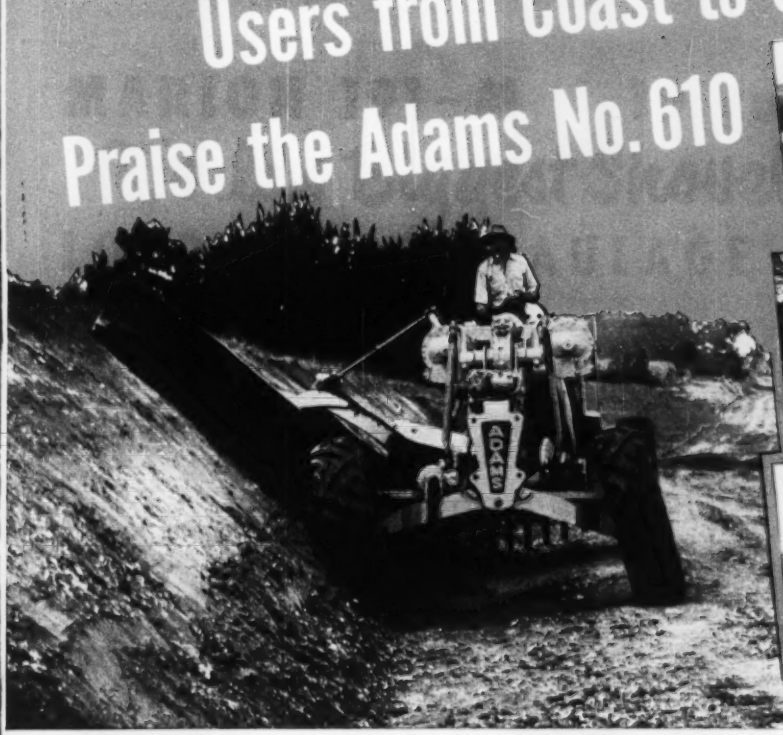

King of all Motor Graders for Rugged, Heavy-Duty Work

Wherever you go, you'll find the husky, 100 hp. Adams No. 610 hard at work on the roughest, toughest grading operations.

Pictured above are just a few of the many jobs that the No. 610 handles easily, economically . . . high bank sloping—material spreading and maintenance of haul roads on dam projects—precision subgrading for new highways—blending and spreading heavy road mix.

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- **8 Overlapping Forward Speeds**... Flexible working range speeds work—increases output—provides high transport speeds.
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- **Positive-Action Mechanical Controls** . . . Dependable, accurate adjustments—because they're geared . . . Easy, natural steering.
- **Ample Operating Clearances**... Quick, easy adaptation to work . . . Operator comfort, convenience, efficiency.
- **Fast, Easy, Servicing Plus World-Wide Dealer Service** . . . Saves time and money.

Make your next motor grader an **ADAMS**

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GET THE DETAILS FROM

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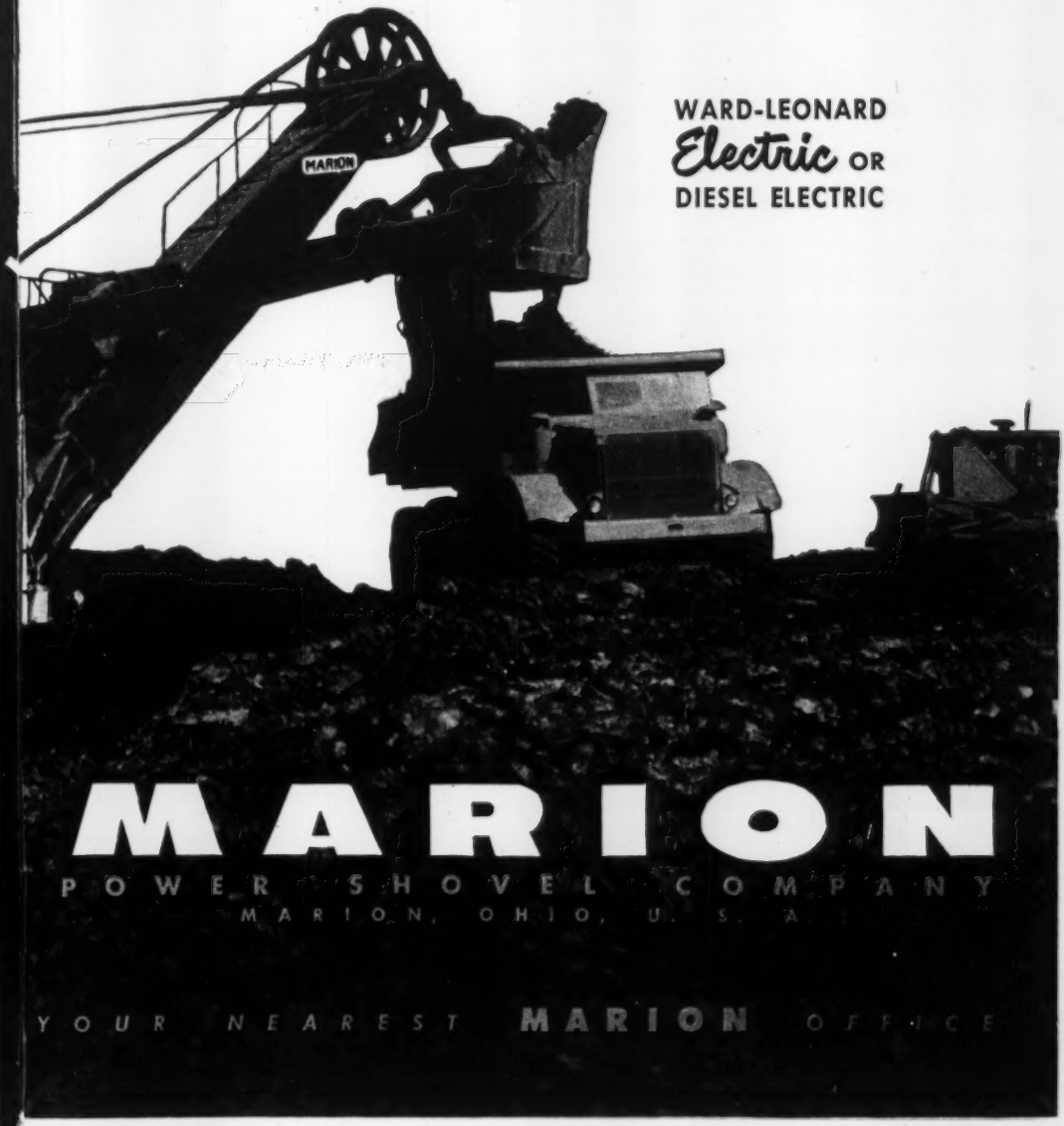
LOADING BIG HAULAGE UNITS



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as much as 40% with

HYPRESSURE Jenny
Steam Cleaner

Time studies show that repairmen, working on dirty machinery, spend up to 40% of their time wiping mud, muck and grease from tools and equipment. JENNY steam cleaning, *before* repairs or reconditioning, saves those lost man-hours; cuts equipment repair time—and expense—practically in half; gets your equipment back into service—and earning—nearly twice as fast.

JENNY steam cleaning is 10 times faster than hand-cleaning methods. One man using Hypressure JENNY, can do more cleaning in an hour than 10 men can accomplish in the same time by solvent-brush-and-scraper methods.

JENNY cuts time and labor costs 90% on jobs such as cleaning brick, tile, stonework, concrete, building exteriors and preparing bridge and structural work for painting.

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Hypressure Jenny Division

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(*Continued from page 10*)

probable that the people whose homes and business places are flooded to that depth would consider the effect of the upstream reservoirs of any great significance.

The main purpose of my discussion was to point out that too much is expected of reservoir storage, that if people will continue to build on the natural flood plains of our rivers they must depend for protection on other means.

All the work done by the TVA has not altered that basic condition at Chattanooga. The flood crest has been reduced, but for complete protection, Chattanooga must build levees.

GERARD H. MATTHES
Consulting Engineer
New York

Canal gravel excluders

Sir: I would like to compliment you on the fine article "Renaissance on the Rhone" (ENR Nov. 22, 1951). I especially appreciate the amount of detailed information in the article and in the drawings of the structural features of the Donzere-Mondragon project.

It is mentioned in the article that model tests were made of the headworks sills, which were especially designed to prevent the entrance of detritus into the canal. As I am particularly interested in the problems of detritus ejectors and excluders at the present time, could you tell me where further discussion of those model studies can be obtained?

LLOYD C. FOWLER
Lecturer in Civil Engineering and Irrigation
University of California, Berkeley.

EDITORS NOTE: Le Laboratoire National d'Hydraulique at Chatou (Seire-et-Orse) France, performed the very extensive model studies required for the project.

Buck fever

Sir: Referring to Mr. Conrath's letter to your issue of Nov. 22, p 45, entitled "For Safer Driving", the following is an excerpt: "The driver generally suffers a momentary nervous breakdown which freezes him stiff to the wheel etc."

In my opinion, this is not due to fatigue, acclimation or hypnotism, but is in itself a fundamental psychological disturbance, it is well known in hunting circles as "Buck-Fever".

I think that psychological research would prove my statement.

C. D. NORTON,
Professional engineer,
St. Lambert, Que.

PENTA PRESERVATIVE PAYS

Ascension Lutheran School. Architect: Kenneth E. Wischmeyer (formerly Wischmeyer & Lorenz), St. Louis. Contractor: George Moeller Construction Company, St. Louis. Wood Treater: Associated Wood Preservers, St. Louis. Lumber: Hill-Behan Lumber Company, St. Louis.

Wood used for subflooring and vital structural members of Ascension Lutheran School, St. Louis, has years of added endurance because it is pressure-treated with Monsanto Penta. This means important economies in the future because the lumber is in hard-to-get-to places which would make repairs expensive.

Penta preservative protects against termites and other wood-boring insects. It prevents decay due to fungi.

Penta is a stable chemical with uniform effectiveness. It does not leach. It holds its preserving power even when subjected to rain and ground water. Wood treated with properly formulated penta can be painted.

Penta is named in more than 50 government specifications for durable wood applications ranging from tent pins to freight cars. We will mail you a list of these specifications if you will ask for it.

Penta gives wood endurance that makes it practical to use in place of hard-to-get steel in many applications. Contact the nearest Monsanto Sales Office or write for information on the use of penta and for names of firms who can custom-treat wood or supply penta-preserved lumber. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1759-A South Second Street, St. Louis 4, Missouri.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto Canada Limited, Montreal.

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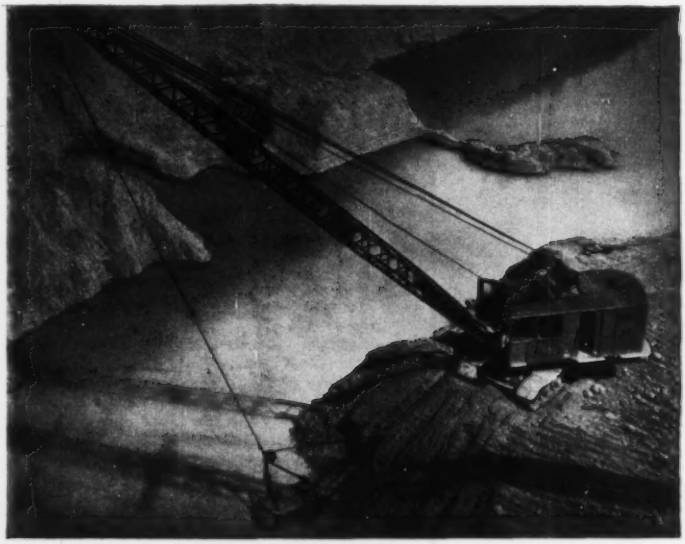
You'll save time and cut costs with ROEBLING rope

FAST OPERATION AND DOLLAR SAVINGS are more important than ever in excavating and construction. One sure way to save time and expense is to specify Roebling Preformed "Blue Center" Steel Wire Rope. Here's a tough rope that stands up under shocks, strains and high speeds. Its preforming always assures maximum handling ease, better spooling and much smoother performance on the job.

Roebling makes a full line of wire rope. Have your Roebling Field Man recommend the *right* ropes for your equipment. And for longest life, get his advice on the correct use and maintenance of wire rope. It is based on experience with thousands of installations. John A. Roebling's Sons Company, Trenton 2, New Jersey.



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MONEY IN 1952—TIGHTER, BUT STILL ENOUGH

Money will be tighter in 1952. Construction will have to compete with other business needs and with defense financing for the supply of loanable funds. But there will still be enough dollars to finance all the new construction possible with the restricted supply of materials.

• **Money for Lending**—The supply of money for new loans depends basically on how much Americans save. People saved heavily through most of 1951. Savings that ran to as much as 10 per cent of personal income after taxes during part of the year added to the supply of loanable funds in banks and insurance companies. And people also borrowed less money for durable goods like automobiles and television sets. That left more funds available for loans for other purposes—including construction.

Americans are expected to go on saving at a high rate in 1952—barring another war scare like the one last winter. With incomes headed for new heights this year, savings may also set a record for non-war years. The big cutback in housing activity will also free a lot of mortgage money for other loans.

• **Competition**—But builders cannot count on getting their share of this money easily. Municipal bonds and mortgages will have to compete with a huge demand for cash for other purposes.

Manufacturing companies will be potent competitors for loans this year. Many companies will have to borrow heavily. Unusually big business requirements for cash come from three main sources:

- Buildup in the defense program forces industry to carry big inventories of materials and parts. Some companies will have to borrow to finance these inventories. And, with so much cash already tied up, many companies will have to borrow whenever a special need for cash arises.
- Tax payments will jump in March and June. Business must pay 35 per cent of its 1951 taxes in each of those months. Business is expected to borrow heavily to pay its taxes.
- Industry will be borrowing to finance expansion programs. Heavy taxes are cutting into retained earnings, which usually pay for most of industry's new plant and equipment. So much of the needed money will come from new security issues. Issues of new stocks and bonds may pass last year's level of more than $6 billion.

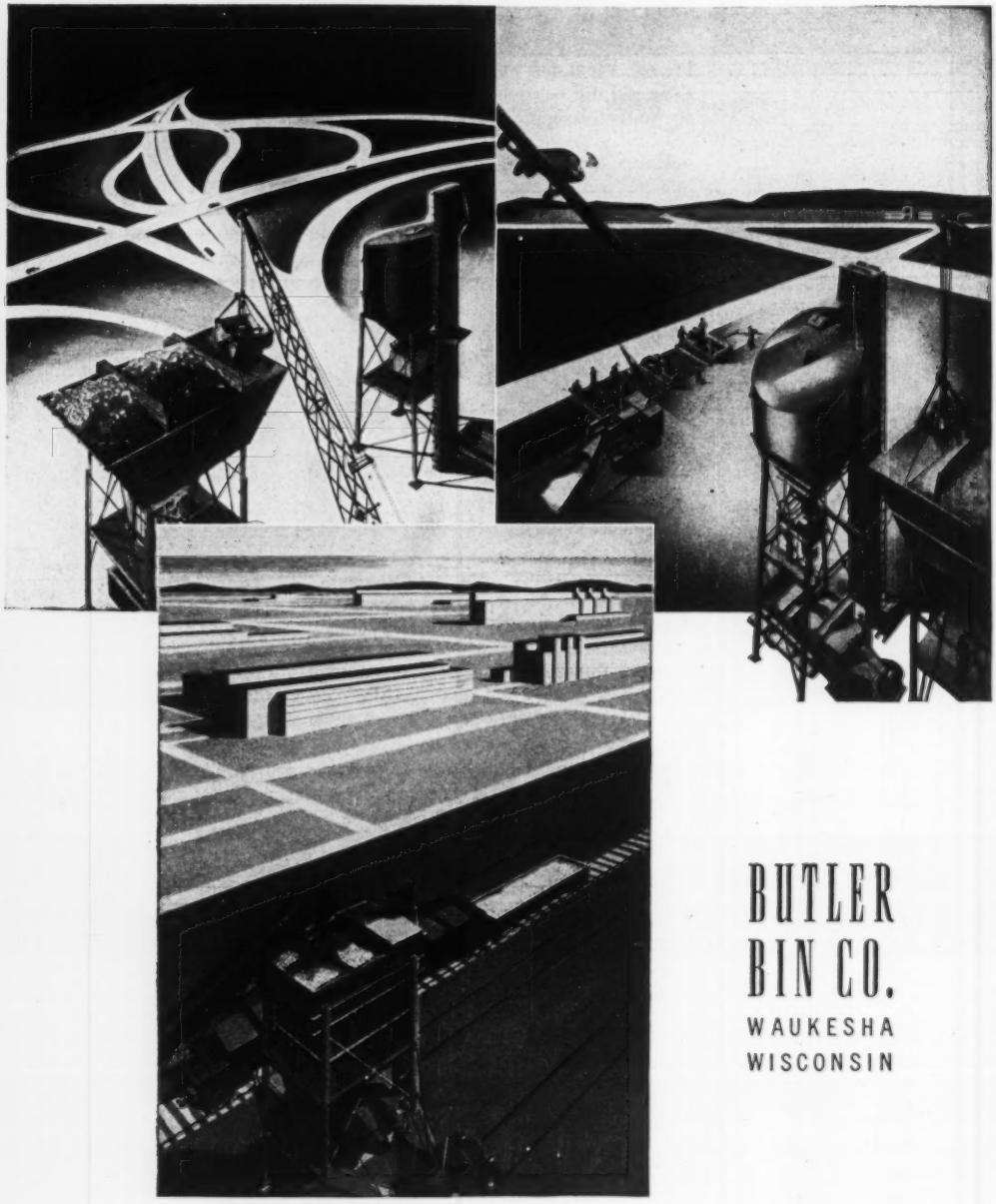
• **The Government**—The Federal government will be competing for funds this year. In the last half, the Treasury will be running a deficit that may reach $10 billion or more. So the government will have to borrow several billions itself later in the year.

Federal Reserve Board policy of refusing to support government bonds at par value will help to make money tight. Banks and insurance companies normally sell government bonds when they need cash reserves to make new loans. But now they take a loss when they sell governments, so they are less likely to use this method of increasing reserves.

Restrictions in lending—in the form of voluntary credit control"—will also cut into the supply of money for construction. Lending institutions will refuse to make some "inflationary" loans for "non-essential" building.

Money troubles are eased by the fact that much of this year's construction will be financed outside the municipal bond and mortgage market. Factory construction will be a larger share of total work. A larger than usual share of construction will be Federal work, which presents no financing problem. And the expected decline in the total volume of work—caused by shortages of materials—will reduce the short-term need for construction funds.

For another development in the field of financing construction, see page 83.



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New production records for the world's largest construction projects are today attained through important engineering advances in automatic operation offered by BUTLER equipment.

Message from Washington

WORDS OF PROPHECY from high places flowed out of Washington this week in awesome volume. Those that were definite demand noting. A large percentage was tinged with politics, and thus was indefinite and more wishful than important. Yet in total what Truman, Wilson and Fleischmann said adds up to marching orders for construction in the first half of 1952.

When the President said "we must have those things that contribute most to defense," he gave force to Defense Mobilization Director Wilson's statement that "we have now reached the period of severest pinch in the allocation of critical materials to the civilian economy," which set the stage for Defense Production Administrator Fleischmann to say "more shells, less building and fewer automobiles." As a result, here are things to expect, some based on definite DPA actions, others on implications in the high-placed statements:

Homebuilding will be reduced to 60% of its 1951 rate, by denying it necessary brass and copper products and by stiffened credit controls.

Industrial construction will be slowed down by confining approval for new work to only the most urgent cases of defense-contributing building. Expansion for the good of the economy, which helped push 1951 industrial construction to a record level, will not be resumed in the first half of the year because copper is needed for shells. Still, industrial construction will be construction's mainstay. And the backlog of such work is tremendous.

Schools and hospitals, which have not fared too well, will at least not be cut.

Power producing facilities related to defense will continue to receive high priority.

The military will have to get along with fewer new mess hall and recreation buildings, but will otherwise get what it says it needs. The Atomic Energy Commission will get whatever it asks for.

Highways may fare better on steel. The President said "we must continue building of essential highways," and Mr. Wilson "hoped" there would be more steel for roads. Savings of steel on reduced housing and industrial work could make more available for highway construction, which does not require copper.

Regional unemployment caused by controls will have to be faced, for Mr. Fleischmann says that "essentiality of projects, not unemployment, determines allocation of materials." Thus areas, which have suffered from the drastic cuts in commercial building, without getting offsetting defense work, will continue to suffer. And unemployed construction workers in these areas may have to take jobs elsewhere as they did in World War II.

Plainly the message from Washington says that the troubles that beset the construction industry last year are to be added to in the first half of 1952. What happens after that is certain to be affected by political pressures, and these will be in the direction of relieving shortages of civilian goods and bad spots of unemployment. That could conceivably brighten the civilian construction picture.

Lawyers versus engineers

BECAUSE the oxidization ponds proposed to be built as part of a projected sewage-disposal system for San Jose, Calif., appeared to be "in the nature of an experiment," the trial judge in the city's condemnation proceedings ruled against the city (ENR Dec. 27, p.32). The unfortunate result of the ruling is that the 2,500 acres required for the ponds cannot now be obtained by the city through condemnation without further action by the city council.

The decision serves to emphasize the wide divergence between the way in which lawyers approach problems laid before them and the way engineers approach theirs. Lawyers look back over the record for some precedent to guide them. Their decisions generally are loaded down with references to what judges have ruled in earlier cases. Engineers are continually trying to change and improve on what was done in the past.

We hope that other judges will not take the San Jose judge's finding as a precedent when similar questions relating to engineering projects come before them. That type of reasoning could be a serious check on progress.

Any radical change from accepted methods is in the nature of an experiment. This particular proposal was based on favorable results obtained from tests made on a much smaller scale. And it was put forward by experienced sanitary engineers with a reputation to protect. Engineers willing to risk their reputations on "experiments" of that kind should be encouraged, not discouraged. The many processes now commonly used to purify sewage were at one time installed in some city "in the nature of an experiment."

Silent service not enough

ACROSS THE BORDER an interesting experiment in developing greater public recognition of the work of engineers has been started by the Corporation of Professional Engineers of Quebec. That organization is sending to its members a series of well written public-relations studies bearing the general title "Silent service is not enough." The most recent one tells of the advantages of participation as engineers in radio programs. This idea has much to commend it to our state societies of professional engineers, whose access to local stations—where local engineering projects command attention—give engineers a fine opportunity to gain public recognition and to render a service.

The Gradall works easily in many a tight spot!

WHEN YOUR CONSTRUCTION WORK must be done in "tight" places such as this, there's one machine you can count on to do the job quickly—the Gradall.

Its "arm-action" boom actually reaches out, twists and turns, to do its work in areas very little larger than the machine itself. And the Gradall's powerful hydraulic "down pressure" and exacting tool control make it easy to dig excavations to blueprint specifications—with clean-cut vertical or sloping sides, precise square corners, and perfectly graded floors. It practically eliminates costly hand labor.

But take your own construction problems to your nearest Gradall Distributor. He'll be glad to show you how this versatile machine can cut costs for you, too.

Gradall—the multi-purpose construction machine *with controlled down pressure*

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MORE COPPER PROMISED—Nettled because "responsible mobilization officials have conducted a systematic campaign that practically amounted to propaganda urging the substitution of aluminum for copper," Cornelius F. Kelley, Anaconda Copper Mining Co. chairman, predicted last week that the copper supply picture "will begin to improve materially during the latter half of 1952." He says the supply of copper promises to increase in about the same proportion as expanding steel capacity—adding 125,000 tons annually by the end of 1952, about 205,000 tons annually above present levels by 1954, and another 240,000 tons during the two years 1955, 1956.

PLENTY OF WORK AHEAD—The 17 member companies of the National Constructors Association put in place about $800 million in heavy industrial construction last year. This year they are planning on at least 20% more, they said at their annual meeting in New York last week. Construction of new chemical plants and oil refineries is leading the boom. Stone & Webster Engineering Corp. alone reports its backlog of work is solid for the next 18 months and contract talks now going on indicate no slackening of plant building in 1953 or '54. Association President J. F. Pritchard, who is also president of J. F. Pritchard, Inc., Kansas City, said that with all the current problems confronting the industry, his firm will be 100% occupied for the next two years.

EXPLOSIVE REACTION—DPA's second-quarter allocations of controlled materials (see next page) brought a burst of protest this week from construction organizations. The National Association of Home Builders, whose industry was hit most directly and severely by the cutback, called it the "number one blunder of the controls program." General contractors and metropolitan building groups joined the chorus. They forecast both inflation and aggravated unemployment in the building trades. Even highway builders, who received slightly increased allotments, were quick to point out the benefits, measured against heavier requirements and larger backlogs, will come no closer to meeting the need than did the first quarter allocations.

Contracts by type of work

	This Week	Cumulative 3 wks— 1952	1951	% chge
Waterworks.	$1.4	$18.6	$9.4	+98
Sewerage ...	1.5	11.2	22.7	−51
Bridges	2.1	9.8	23.3	−58
Highways ..	31.7	80.2	49.1	+63
Earthwork, Waterways.	2.8	20.7	9.9	+109
Buildings:				
Public	24.6	104.4	303.3	−66
Housg., pub.	11.3	43.5	70.4	−38
Housg., priv.	60.9	114.4	86.3	+33
Commercial	15.9	25.3	67.8	−63
Industrial .	56.8	193.8	254.5	−24
Unclassified .	40.2	67.1	64.9	+3
Total	**$249.2**	**$689.0**	**$961.6**	**−28**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100	1913	1926	1949
Constr. Cost. Jan. '52	547.83	263.34	114.84
Bldg. Cost. Jan. '52	405.62	219.26	115.30
Volume ..... Dec. '51	404	164	117

IN THIS ISSUE—New cutbacks in controlled materials will hit industrial and commercial building and housing hardest in second quarter (p. 23) . . . . . Employment practices for construction work at overseas bases are being probed (p. 26) Experts report present power expansion plans may prove inadequate (p. 27) . . . . . New funds sought for civil defense (p. 29) . . . . . New Jersey Turnpike opening unveils some remarkable bridge construction (p. 30) . . . . . TVA used some extraordinary cofferdam cells on the Tennesee River (p. 34) . . . . . Navy's master jet base at Brunswick, Maine, is growing fast (p. 37) . . . . . Office building has new comfort feature (p. 40) . . . . . An important canal will soon connect the Rhine with the sea (p. 51) . . . . . Mobilizers have made their first detailed report on progress under the rapid amortization program (p. 83) . . . . . New plans to finance industrial building are afoot in New England (p. 86) . . . . . Labor and management have signed a peace pact at the Paducah, Ky. A-bomb plant (p. 81) . . . . . New York building trades are suffering (p. 124).

TO MAKE THE PENNSYLVANIA TURNPIKE

Safer at Seventy

King of Prussia Terminus near Philadelphia. Designed by Pennsylvania State Highway Dept. General Contractor: L. G. DeFelice and Son, Inc., New Haven, Conn. Curb installed by Polselli & Angelucci, Philadelphia.

White Concrete Reflecting Curb

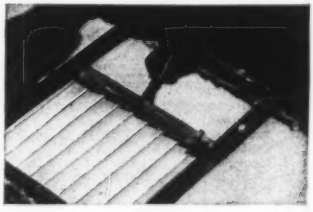
made with ATLAS WHITE DURAPLASTIC*

The 70 m. p. h. speed limit on this famed express highway tells the story fast: good safety engineering. Naturally, for greater visibility, white concrete reflecting curb was used . . . made with Atlas White Duraplastic air-entraining portland cement.

Why are such *white reflecting* curbs more visible? Because by day, the white concrete stands out in bright contrast to familiar pavement grey. By night, the faces of the corrugations reflect headlight rays back to the driver . . . clearly outlining the road ahead. And on rainy nights, when highway visibility is at its worst, the wet faces of the curb are even more mirror-like.

Placement is simple and fast. One method is to pour an Atlas White Duraplastic mortar mix on a grey cement base, screed to 1-inch thickness and score with a hand tool (as at right). Contractors prefer Duraplastic because its air-entrainment feature makes the mix more workable, more plastic; makes placement and scoring easy.

For further information, write Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

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For Concrete Reflecting Curb and Markers

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"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

DPA throttles down construction

Second-quarter building slashed $1.1 billion below level for same quarter of last year

Mobilization for defense tightened a metal clamp around the construction industry last week.

"In the second quarter, even more than in the first quarter, we all are face to face with the hard fact that there is a cost for making our nation strong—strong enough to make the Communist aggressor think carefully before plunging the entire world into another world-wide conflict . . . strong enough to win any war that may be forced upon us," said Defense Production Administrator Manly Fleischmann.

And he hung a price tag on that strength, showing what the cost will be for the construction industry. Sweeping cutbacks in the second quarter will drop building to a rate of about $6.5 billion.

This compares with a level of $7.6 billion in the second quarter of 1951, and $6.7 billion in the second quarter of 1950, after adjustments for price changes. The impact will strike industrial expansion, commercial building, and private housing, hardest.

• **Industrial**—There will be virtually no new starts in industrial construction in the second quarter. In fact, structural steel for this purpose is cut by 40%, requiring a slowdown even on plant-building projects already underway.

To continue projects now underway would require about 275,000 tons of structural steel in the second quarter. DPA has allocated only 213,000 tons.

Testifying to the joint Senate-House "Watchdog" Committee on Defense Production two days before official announcement of allotments for the second quarter (see table on next page), Fleischmann said:

"Since the supply of controlled materials is sufficient to support a rapidly expanding construction boom together with defense, defense-related, component, equipment and minimum consumer goods program, it has been necessary to slow down the rate of industrial expansion.

"Our allotments, generally speaking, will sustain projects already underway. However, we shall not be able to permit new industrial starts in the second quarter except for the most urgent needs."

In another part of Washington, Fleischmann's former deputy, now Administrator of the National Production Authority, Henry H. Fowler expounded the new controls policy to members of the Construction Industry Advisory Committee—a committee that has become "advisory" virtually in name only, and is called in by NPA primarily to hear what NPA has decided to do.

• **Commercial**—Construction of stores, office and public buildings, and less-essential commercial structures will be brought "to a virtual standstill" except for a few in critical areas where they are badly needed.

"While there have been substantial requests for new commercial construction projects . . . the material shortage and the heavy direct and defense-related demands on these materials have not permitted any substantial allotments for them," Fleischmann reported to the "Watchdog" Committee.

He particularly ruled out any relief to unemployment-stricken New York, where 22,000 building tradesmen were idle at the last count (see story on page 124).

"In some localities where defense construction is not extensive, such as New York City, we have been asked to permit commercial construction primarily to provide employment for construction workers," Fleischmann said.

"We do not believe that mobilization goals can be achieved if allocations are based in large measure on employment factors. Because of the acute shortage of metals used alike in construction and projection, it is my conviction that basic allocation policies must be based almost entirely on the factor of essentiality to the mobilization effort."

• **Housing**—At Fowler's meeting with the "Advisory" Committee before official announcement of the allotments, committee members protested a reported plan to cut allotments for housing starts by 40% below the 1951 level.

DPA Administrator Manly Fleischmann put a price tag on the cost of defense strength.

Fowler told them that the percentage was predicated upon the amount of materials available for housing for the second quarter, and that a determination has yet to be made by NPA and the Housing and Home Finance Agency as to how many actual housing starts these materials would provide for.

He said the two agencies are studying the means by which revised regulations may result in permitting a greater number of actual housing starts to be made with the available materials by means of conservation restrictions and by the use of other methods.

Fleischmann told the "Watchdog" Committee "it will be necessary to reduce the level of residential housing starts to about 60% of the 1951 level in order to conserve materials directly used in such construction. . . . Requirements for residential construction, indeed, go far beyond those necessary for construction only. They extend to refrigerators, stoves, water heaters, washing machines and other products."

Official figures bear him out indeed. The metal DPA allowed for housing in the April-May-June quarter provides for a level of only 600,000 new home starts a year—45% below the total of 1,100,000 dwellings actually begun last year, and far below the current building rate of 850,000 a year.

• **Consolation**—But there were a few bright spots in the general gloom

ALLOTMENTS OF CONTROLLED MATERIALS

Atomic Energy Commission	Steel in tons	Copper in pounds	Aluminum in pounds
Second quarter	118,790	7,673,000	5,553,000
First quarter*	162,050	8,515,000	6,000,000
Fourth quarter	183,403	7,160,000	7,559,000
Defense Department			
Second quarter	2,617,361	309,940,000	278,190,000
First quarter*	2,500,900	299,800,000	250,000,000
Fourth quarter	1,946,000	205,800,000	168,000,000
Defense Electric Power Administration (Powes Expansion Projects)			
Second	339,650	62,009,000	58,212,000
First*	309,550	79,050,000	39,000,000
Fourth	289,176	80,852,000	35,500,000
Federal Security Agency (Schools)			
Second	128,279	5,354,000	8,000
First	111,296	3,897,000	10,000
Fourth	94,614	2,881,000	15,000
Federal Security Agency (Hospitals)			
Second	75,850	2,723,000	388,000
First*	71,623	2,733,000	400,000
Fourth	71,299	2,190,000	500,000
Maritime Administration (Ship Construction)			
Second	121,100	2,950,000	194,000
First	100,975	4,840,000	100,000
Fourth	103,000	4,455,000	350,000
Petroleum Administration for Defense (Gas and Oil Well Drilling, Refining and Pipeline Expansion)			
Second	1,710,375	7,775,000	1,240,000
First	1,708,500	8,300,000	850,000
Fourth	1,806,500	7,975,000	785,000
Bureau of Public Roads (Streets, Roads, Highways, etc.)			
Second quarter	251,525	592,000	172,000
First quarter*	211,520	900,000	250,000
Fourth quarter	250,000	1,150,000	520,000
Agricultural Machinery and Implements			
Second	541,822	9,272,000	7,429,000
First	527,100	7,800,000	6,500,000
Fourth	528,400	8,500,000	5,800,000
Building Materials			
Second	849,263	51,156,000	46,494,000
First*	1,113,100	53,000,000	45,300,000
Fourth	1,016,100	45,900,000	50,000,000
Construction Machinery			
Second	456,179	6,046,000	1,731,000
First	487,654	7,220,000	2,400,000
Fourth	503,450	4,340,000	2,000,000
Consumer Durable Goods			
Second	872,180	34,584,000	48,030,000
First*	950,000	41,000,000	53,000,000
Fourth	867,000	49,050,000	57,000,000
Containers and Packaging			
Second	1,526,396	288,000	19,561,000
First	1,682,250	258,000	19,000,000
Fourth	1,615,216	271,000	17,900,000
Electrical Equipment			
Second	655,261	164,695,000	31,382,000
First*	609,760	150,669,000	24,250,000
Fourth	571,530	148,700,000	27,000,000
Engines and Turbines			
Second	588,330	30,893,000	3,299,000
First	580,500	29,930,000	3,900,000
Fourth	461,000	15,070,000	2,600,000
Industrial and Commercial Construction			
Second	601,948	29,844,000	10,890,000
First	712,700	28,886,000	7,000,000
Fourth	653,725	7,100,000	22,000,000
General Industrial Components—Bearings, Valves, Electric Motors, Etc.			
Second	1,203,225	182,456,000	21,004,000
First	1,089,500	172,074,000	18,000,000
Fourth	1,067,500	150,940,000	14,700,000
Metalworking Machinery and Equipment (Machine Tools, Etc.)			
Second	652,535	32,357,000	8,464,000
First*	700,000	36,028,000	8,555,000
Fourth	643,500	25,080,000	7,600,000
General Industrial Equipment (Cranes, Industrial Power Trucks, Etc.)			
Second	532,568	40,860,000	15,369,000
First*	500,936	41,905,000	17,000,000
Fourth	855,500	61,020,000	25,400,000
Motor Vehicles (Automobiles, Trucks, Buses, Etc.)			
Second	3,009,760	106,683,000	59,400,000
First	3,054,131	128,055,000	77,710,000
Fourth	3,464,300	147,800,000	92,300,000
Railroad Equipment (Freight Cars, Locomotives, Etc.)			
Second	1,599,141	84,320,000	4,684,000
First*	1,643,750	86,610,000	6,000,000
Fourth	1,872,425	64,355,000	8,500,000
			* Adjusted
OTHER SECOND-QUARTER ALLOTMENTS			
Defense Solid Fuels Administration			
Coal Mine Construction	12,790	259,000	19,000
Coke Oven Construction	26,710	321,000	2,000
Housing & Home Finance Agency	78,600	3,011,000	48,000
Aluminum & Magnesium Div.	15,625		5,346,000
Copper Div.	42,150	3,602,000	1,746,000
Iron & Steel Div.	211,082	3,955,000	116,000
Water Resources Div.	220,415	3,131,000	368,000
INTERNATIONAL			
OIT—ECA	669,484	10,114,000	1,746,000
Canadian Div.	467,050	3,731,000	1,843,000

DPA's announcements cast across the construction industry.

Allotments of structural steel to the military increased from 171,000 tons in the first quarter to 240,000 tons in the second. Other increases went into allotments for construction of public roads, for building schools and hospitals, for utilities expansion (see story on page 26), and for mining construction.

Highway and street construction will receive 70,000 tons of structural shapes in the second quarter as compared with 53,000 tons in the first.

Structural steel requirements for public roads "are far beyond any level that can be supported," Fleischmann told the "Watchdog" Committee. Although second-quarter levels are above the first-quarter levels, the materials granted to the Bureau of Public Roads will permit construction only of the highest urgency.

DPA said 500 more schools will be started, bringing the total under construction to 2,400 across the country. Steel allotments for colleges and libraries will support 241 units now under construction and will allow for the start of 19 new units, primarily medical schools and research laboratories.

The Defense Electric Power Administration steel allotments increased from 309,550 tons in the first quarter to 330,650 tons in the second quarter. While allotments of copper dropped, the allotments for aluminum which is being substituted for copper, were also increased.

• **Less "attrition"**—Both Fleischmann and Fowler reiterated last week that the 10% to 15% allowance they had made for "attrition" in allotments had not worked out as well as it did during World War II.

Fowler pointed out the principal reason is that more claimant agencies are competing for available supplies than during World War II, because more items are permitted to be manufactured than during World War II.

Because of this miscalculation, more than one-fifth of all aluminum promised to users in the first quarter won't get to them until some time in the second quarter. About 15% of the brass mill products scheduled for the first quarter won't get there until April or later, and similar delays will result in certain copper products.

To correct this precarious situation, Fleischmann and Fowler said it has been found necessary to reduce Controlled Materials Plan over-allotments to 5% for the second quarter. The immediate result is to reduce the availability of materials for use in the second quarter, in spite of an actual increase in supply of materials.

Plans for $80-million expressway highlight active week for highways

Henry H. Fowler, former deputy who has succeeded Manly Fleischmann as NPA Administrator, broke sad news for construction men.

• **Encouragement**—Fowler injected one new note of hope when he told the advisory committee that from now on, when construction authorizations are issued, allotments will be made whenever possible on a project basis rather than on a quarterly use basis.

The construction men quickly marked this as another encouraging advance in NPA policy. It means that when an applicant indicates what his requirements will be for each quarter, he will be given advance allotments, but he would receive delivery only in the quarter for which the allotment was made. This arrangement has long been sought by various important contractor organizations.

The advisors were advised that NPA is considering a plan for issuing construction authorizations, with no allotment of materials until they are available. But no decision has yet been reached as to the practicality of the plan.

If such a plan is adopted it would mean that a builder might apply for, and get, an authorized construction schedule in the second quarter, but not receive his allotment until some future quarter. This would allow him to go ahead with his planning, engineering, purchase of property or whatever was necessary to get the preliminary work on the project started.

The committee was also told of a contemplated redrafting of all construction regulations into one package. Fowler said a completed draft of the new regulation would be sent to them shortly. They were asked to attend another meeting in February, where committee members will make suggestions for revisions.

A move by New York's Board of Estimate clearing way for construction of an $80-million Brooklyn-Queens expressway featured an active week in highway plans and developments.

The Board of Estimate voted to acquire the last piece of land needed for construction of the six-lane 11-mile boulevard designed to be one of the chief links in the proposed Washington-to-Boston turnpike system, bypassing Manhattan.

The land acquisition will cost about $6 million. Before construction of the expressway can begin, new homes must be found for 1,400 families living in buildings in the path of the expressway.

• **Toll roads sought** — Legislation sought by Gov. Alfred E. Driscoll from the New Jersey legislature include several expansions of the highway system by restoring to toll roads where feasible. Among them are:

(1) Study of a proposed link from Newark across Newark Bay to the Holland Tunnel at an estimated cost of $75 million.

(2) Creation of a new authority within the State Highway Department to construct the southerly 80 miles of the Garden State Parkway as a toll road. He estimates the cost of the project at $50 million.

• **Other highway activities**—As traffic to the western terminus of the Pennsylvania Turnpike was pounding connecting Ohio highways to pieces, State Highway Director T. J. Kauer took emergency action. He posted those highways crumbling fastest for 25% reduction in load limitations.

For Pennsylvania this meant fewer of the heaviest trucks, which pay the heaviest tolls, were entering the western terminus—and its officials are not happy about it. Meanwhile financing of the Ohio Turnpike has been held up until commitments for allocation of steel are obtained.

Virginia must spend $21 million, should spend $34 million, in the next ten years to overcome current deficiencies and check further deterioriation. This is the conclusion of a survey made by the Automotive Safety Foundation.

A bill to set up a toll road authority has been recommended to the Georgia legislature by Gov. Herman Talmadge. . . . A traffic survey to determine whether the Jacksonville-to-Miami toll turnpike is economically feasible is underway. The check will be submitted to Parsons, Brinckerhoff, Hall and Macdonald for analysis and recommendation during April . . . Governor Dan Thornton has asked the Colorado legislature to enact legislation outlining the administrative organization of the state highway department, a road system selection, a system for programming construction work, and methods of financing the program. . . . The Maryland State Roads Commission's Advisory Council on highway construction estimates it will take 15 years and as much as $450 million to give the state an adequate road system. . . . In a joint report the Bureau of Public Roads and the National Park Service recommended development of a Mississippi River Parkway. No route was specified.

• **Bridges and tunnels**—The Delaware River Port Authority will market bonds this year to build a second river crossing parallel to the Camden-Philadelphia bridge. The commission and several civic and industrial groups want the crossing to be a bridge. (It would cost about $84 million and take about four years to build.)

The cities of Camden and Gouchester, most vitally affected on the Jersey side of the crossing, have been fighting for a tunnel. (It would cost about $107 million and take about five years to build.) Final decision is expected soon.

In Maryland, right-of-way is now being acquired for the first leg of Baltimore's proposed inner harbor crossing. To cost between $35 million and $45 million, the project will include a new bridge over the Middle Branch of the Patapsco River and a tunnel beneath the Northwest Branch of the Patapsco River. The bridge and tunnel portions will be paid from toll charges under the State Bridge Authority.

Legislation provides that work on the project cannot begin until one year after completion of the Chesapeake Bay Bridge. Once started, it will be about three years before it is finished.

The New York State Thruway Authority this week sought bids on $6 million of preliminary work for its controversial bridge across the Hudson River between Tarrytown and Nyack (ENR Feb. 1, 1951, p. 112). . . . Last technical obstacle to sale of $21 million San Francisco-Oakland Bay Bridge bonds has been removed with decision of organized commuters not to appeal the Superior Court's decision authorizing the sale (ENR Dec. 27, 1951, p. 17).

SWEARING IN witness to testify on construction hiring practices. Senator Lyndon B. Johnson of Texas stands to read the oath. Flanking him at left are Sen. Lester Hunt of Wyoming, Special Counsel Downey Rice, and (at Johnson's right) Sens. Estes Kefauver, of Tennessee and John C. Stennis of Mississippi. (ENR Photo).

Senate group probes overseas hiring

The opening gun in what appeared to be a lengthy campaign of investigation into U. S. military construction abroad was fired in New York City last week. The Senate's Preparedness Investigating Subcommittee held hearings on charges of waste and inefficiency in construction hiring.

Testimony submitted to Senator Lyndon B. Johnson and his committee brought some rather sensational—but not heavily substantiated—charges of excessive costs in the hiring of personnel; exhorbitant fees charged construction workers hired; mismanagement in the jobs overseas, and other matters. It also brought some vehement denials.

But the tenor of the committee's questions made it clear that the objective is an overall check into the conduct of such projects, rather than the announced purpose of the hearing: "Employment practices and costs in connection with overseas construction."

• **Opening witness**—In the austere surroundings of a courtroom in New York's skyscraper U. S. Court House, the hearing opened with testimony by James H. Dillon, president of the Construction Men's Association—an organization that claims a membership of 10,300 men working on construction overseas.

Said Dillon: Communications to his office (which also acts as a mailing address and clearing house for members) indicate that men are being forced to go to employment agencies in order to get jobs, and then forced to pay these agencies fees ranging up to 5% of their full yearly pay (including subsistence allowances and overtime); the men are not properly screened and many hired are incompetent or put in wrong jobs; there is the appearance of collusion between the employment agencies and personnel officers of the contractors.

• **No we didn't**—One of the rebuttals came from Richard C. Wall, personnel officer of Atlas, who said that the rate of resignations and dismissals at the French Morocco jobs was exactly 24.8% in one year—a total of 1,154 men out of more than 5,000 U. S. citizens employed. Of these, he said, 973 resigned—"the biggest reason being homesickness"—144 were discharged for cause. Cost per worker "delivered at site" he put at $717.

More, said Wall, Atlas has not used a private employment agency in any instance to hire men for its overseas work, and has no intention of doing so. (It uses its own recruiting force.)

• **That five percent**—Francis A. Capell, general manager and assistant treasurer of the Personnel Services Bureau (a New York employment agency) got a rough going-over on personal matters from Special Counsel Downey Rice, but stuck firmly to his guns on the claim that the 5% fee charged by his agency in the placement of some 86 men in overseas jobs over the year 1951 was legal and proper.

• **Standby pay?**—Ferreting for evidence of waste, the committee drew from Com. Morton Solomon, district engineer for the hitherto super-secret "Project Bluejay" in Greenland, the statement that $317,000 had been paid to workers as "standby" pay (at $4 a day) after the men had been trained at Minneapolis and had to wait for transport to the job.

In his testimony, also, the committee was told that although the Army was paying a private detective agency in New York to guard security on "Bluejay", information on it had been printed in such newspapers as "The Christian Science Monitor" and was being broadcast from a Russian radio station.

Maj. Gen. George H. Nold, Deputy Chief of Engineers, spoke on cost of revision of plans at overseas bases, and was instructed to study problems brought out at the hearing, for a later report to the committee.

• **Direction hinted**—Throughout the questioning by Rice, Johnson, Kefauver, and Senators John C. Stennis and Lester Hunt, the operation and usefulness of the United States Employment Service kept cropping up.

Almost all witnesses gave somewhat half-hearted approval of the service, but none came through with anything like a hearty endorsement.

General Nold also confined himself to reciting the requirements of the Corps of Engineers and the efforts of its officers to keep the hiring either through the contractors' own organizations or through USES, excepting in special cases where neither of these sources could provide proper personnel.

Other matters in which the senators evinced interest were such things as the use of Military Air Transport planes to transport construction workers to and from overseas jobs; efficiency of management of the projects themselves; security provisions at the jobs and in the United States.

Power construction may be inadequate for industrial growth, report finds

The electric power industry's three-year 30,000,000 kw expansion program is too conservative.

A committee of utilities experts, appointed by the Defense Production Administration when it had a strong suspicion that the industry was trying to expand too fast, came up last week with facts indicating the industry may not be building at a sufficiently rapid rate.

Its report showed that while 1952 figures are fairly realistic, 1953 peaks may be too low by 2,000,000 kw, and 1952 peaks may be low by as much as 5,000,000 kw.

Officially, DPA is not committed to orient its materials distribution in line with the conclusions of the report. But DPA Administrator Manly Fleischmann, who appointed the committee, is honor-bound to consider the report carefully.

If Fleischmann was looking for justification for doling out a larger share of controlled materials to the power industry, the report supplied it. But if he hoped to find ways of cutting back the utilities construction program to save materials, he received a disappointment.

Congress is also taking a look at the nation's power program. A report being prepared by the joint Congressional Committee on Defense Production is expected to generally agree with the conclusions of the DPA committee report. The congressional committee will study suggestions for slight changes in the mobilization setup which would give electric utilities more assurance of getting the material allotted to them.

• **Survey**—The DPA committee consists of Edward W. Morehouse, vice president of General Public Utilities Corp.; Ralph Booth, a Boston engineer; Herbert Marks, a World War II Office of War Utilities lawyer; and G. O. Wessenauer, manager of power, Tennessee Valley Authority.

It based its review on a 1952-through '54 program, and information culled from some 22 meetings with utility operating personnel. The Defense Electric Power Administration, claimant agency for the utilities, can take some solace from the findings. DEPA's statistics fared pretty well under the probe.

But if the committee's recommendations are carried out, DEPA will face a rocky road ahead. One of the major recommendations is that each major plant addition be classified with respect to its usefulness to defense production and regional power supply, and that materials be allotted accordingly. This ticklish job would certainly fall in DEPA's lap.

The committee believes that the utilities and DEPA may be underestimating potential load for residential and rural customers to some degree.

Main reason for the discrepancy, it says, is the potential defense loads and industrial loads, which the utilities could not be expected to know of for either security or practical reasons.

Even the committee, which had access to many classified plans, admits that some of the potential load is not firm enough for utility planning purposes.

• **Recommends changes**—The committee sees no possibility of balancing power supply and demand for the present year and for the first three quarters of 1953 because equipment and construction schedules are so meshed that changes would only result in the eventual loss of overall capacity.

But for the last three months of 1953 and all of 1954, the group believes that manufacturing and construction schedules can be rearranged to stave off power deficiencies. This would presumably be done by DEPA and the National Production Authority through their control over material allotments.

Each proposed project would be classified as to its essentiality to defense loads and area power supply. Those most needed would be given the go-ahead, and materials allotted. It is admitted that close examination of supply and loads as well as manufacturing schedules will have to be carried on if such a program is to work.

But the alternative, says the committee, is curtailment of power to vital defense production, voluntary residential curtailment and the other things that happen when there is not enough electric power to go around.

• **Materials**—Without going into the question of the amount of materials available to carry out this program, the committee comes up with this observation:

Every kilowatt of new capacity requires critical material—steel copper and aluminum. "Our investigation shows that one kw of capacity can be fabricated and constructed with 1/100 as much of these materials as the same kw can supply the power to produce in one year." Put another way, every kw is worth 100 times its weight in critical materials each year.

Edward W. Morehouse, president of General Public Utilities Corp. His committee forecast a power shortage.

Right day, wrong meeting

Through an error in information obtained from official government sources, ENR reported Jan. 3, p. 21, that the Construction Industry Advisory Committee of the National Production Authority would hold a luncheon meeting Feb. 12.

Actually the meeting scheduled for that day in Washington has been called by an industry-wide organization under the sponsorship of the Chamber of Commerce of the United States, entirely independent of any government agency. This group, the Construction Industry Advisory Council, will hold an open day-long session to which all interested persons are invited. The main purpose of the meeting, is to discuss government controls in the defense emergency and try to work out a common basis for recommendations to the government by a united construction industry (ENR Dec. 6, p. 23).

Broadly representative of all phases of the construction business, the council had 109 separate organizations on its roster at the latest count. Building and construction trades unions are practically the only industry groups that prefer not to maintain direct representation on the council. Instead, union leaders attend council meetings by invitation to take part in the deliberations.

$250 million asked for bomb shelters

The Federal Civilian Defense Administration had a hard time getting its program rolling in its first year of operation just ended. For one thing, it couldn't get the public worked up over atomic attack danger and even more important, it couldn't get much money from Congress. So it had to limit its program principally to putting out propaganda about civilian defense.

But FCDA isn't discouraged. Its going to ask Congress for at least a half billion dollars for fiscal 1953. That will cover everything it asked for in 1952 and didn't get. Congress cut its 1952 request for $535 million to $75 million. But FCDA thinks it has learned from last year's set-to with Congress. Last year it couldn't explain what it was going to do with all the money. This time, FCDA will spell it out.

FCDA will ask for $250 million for shelters and for $200 million for stockpiling of medical supplies. And it hopes to document its need for these amounts for each program.

Millard Caldwell, civil defense administrator, makes a new bid for funds to prepare against atomic attacks.

• **Shelter ideas pour in**—Civil Defense Administrator Millard Caldwell (former governor of Florida) says FCDA is on the receiving end of a steady stream of ideas and proposals for shelters. It cannot approve any of them, or place its seal of approval on anything.

As enunciated by Congress and carried out by FCDA, civil defense is a local problem. The job of the federal government is to lead and guide local programs, furnishing technical information not available on local level, and funds on a 50-50 matching basis. FCDA acts through state directors of civil defense. Municipalities and industry are advised to deal with state directors.

FCDA has not given up on shelters, despite congressional edict last session that no money go for this purpose. The agency has prepared basic rules for shelters, made a number of shelter studies, and has issued a technical book on shelters for the use of city officials.

But the agency cannot tell specifically if a certain type of construction is safe. No pat answer can be given because of the variables. Right now the best answer for anyone wishing to know how safe a building is may be found in "the effects of atomic weapons" prepared by the Department of Defense and the Atomic Energy Commission. This is still the "bible" of shelter protection.

Within the next few months FCDA hopes to publish three books on shelters. They will discuss protection by citing a given set of circumstances and recommending what would be a suitable and appropriate protection in each case. From these anyone could get answers to his specific query as to what constitutes shelter.

• **Rough outline**—FCDA is now telling public that reinforced concrete and steel structures that are deep enough and strong enough to withstand direct blast and impact from adjacent falling structures are O. K. There should be no large glass surfaces. Shelter need not be underground. But there are no figures on how thick a wall must be, etc.

Despite the lack of funds, FCDA is making a survey of buildings to see if some are shelters as built. These surveys are being made in large cities with a check list prepared by FCDA. FCDA says that in seventy cities surveyed, shelter exist in existing buildings for two million people. These cities contain sixty-two million, but only thirty-one-million inhabitants are in the vulnerable concentrated area.

Last month the FCDA asked the state civil defense directors to recruit a force of 17,500,000 volunteers to man community emergency groups. This would mean that one out of every twelve citizens will be enrolled. Over 1,500,000 civilians have already volunteered and are now being trained as part of local defense forces.

FCDA gave the states a breakdown showing that in critical target areas 1,500 volunteers per 10,000 population would be needed.

Sewer break for suburb stirs move for system

The brand new $12-million master sewer system completed last month in Tampa, Fla., was built to serve the suburbs.

Last November the 30,000 residents of the Interbay Peninsula rejected a proposed merger with the city which would have connected them with the system. They also ignored an ultimatum from the State Board of Health to find a solution to its overloaded sewer system which was polluting Tampa Bay.

Last week a 26-year-old sewer line broke in at least 12 places and turned three streets of the peinsula's Maryland Manor district into a huge cesspool. Appeals for help brought the district little sympathy.

George K. Strauss, chairman of the district's sanitary commission asked the county health department for chemical treatment of the sewage. "Not practical," he was told. And the county attorney ruled that it is illegal for the county to spend any money in emergency repairs.

This week, as raw sewage bubbled from streets and yards, district residents were busy circulating petitions for creation of a new sanitary district with authority to build a new $4,500,000 suburban sewer system of their own.

Tax aid sought to abate industrial pollution

Last week the Ohio River Valley Water Sanitation Commission again added its eight-state voice in support of fast depreciation privileges for those industries who must build costly treatment facilities for the prevention of stream pollution.

This puts a powerful public regulatory agency squarely behind such private enterprise groups as the American Paper and Pulp Association and the Chamber of Commerce of the United States in advocating the passage of the Byrnes bill (H. R. 5474) to compensate industry for pollution-abatement outlays that cannot be classed as revenue-producing.

This bill, along with an identical bill (H. R. 5742) would amend the Internal Revenue Code to permit a five year write-off of pollution control facilities rather than over the useful life of the equipment. It is an extension of wartime and current practice of allowing accelerated depreciation on defense-built facilities.

The Commission feels that legislation of this kind is in the public interest since it will provide a needed incentive for industrial waste pollution abatement.

Dewey cites need for public works

Governor Thomas E. Dewey of New York, in his annual message to the state legislature last week, said the state's most serious problem is providing for public works construction.

Necessary postponement of some construction from as early as the 1930's has created a backlog that grows with each year.

Building construction during the past year met with little delay. More than 1,000 building contracts with a total value of more than $100 million are now in various stages of completion. But less liberal allocations of steel to the state's highway department has made it necessary to postpone projects needing large amounts of critical materials.

In reporting the progress made in the public housing field, Mr. Dewey emphasized the need for continuing at least part of the emergency program and urged an extension of the Emergency Housing Act for another year. He based his reasons on the decrease in private housing caused by defense restrictions.

Summarizing the work accomplished in 1951, he said, "over $487 million of the state's capital loan fund for public housing and over $16 million in maximum annual cash subsidies, which the state pays to maintain the low-rent character of public housing, has been ear-marked for 65 low-rent projects." Thirty-three of these have been completed with the balance in various stages of completion, planning and construction at the present time.

• **Building Codes**—A state building code for one and two family houses has been drafted and approved by five communities and is being studied by many others. It would be the first state-wide building code ever adopted which makes performance the criterion of acceptibility, the governnor declared.

Studies are also being made to expand the code to include larger buildings. The code would standardize approval of building products and encourage the ingenuity and skills of designers and builders in economizing in building construction.

• **Education**—Construction will begin on an entirely new plant at the state university's medical center in Brooklyn to house the largest medical college in the country. Cost is estimated at $14 million. Similar expansion is also planned for medical facilities at Syracuse.

NEWS BRIEFS

• **Expensive snow**—Snow removal and emergency storm activity during the year-end holiday season cost the owners of commercial and industrial buildings in Chicago at least $15 million, according to the local association of commerce. In addition to the usual pick and shovel work and snow plows, flame throwers, bulldozers and other highway equipment were pressed into use.

• **To deepen the Hudson**—The Army Corps of Engineers has approved a program for deepening the Hudson River channel between N. Y. City and Albany from 27 to 32 ft, a depth sufficient to accommodate merchant shipping built during the last war. The cost is estimated at $26,700,000.

• **New England steel again**—The New England Steel Development Corp. on Jan. 10 asked the National Production Authority for another extension of authority to build a $228-million steel mill in the New London-Waterford, Conn., area. Its original certificate of necessity expired Jan. 11 but if the NPA issues a further time grant it can be retro-active.

• **Shopping center** — In Milwaukee, Wis., two more land parcels totaling 30 acres have been bought to make the proposed Westgate shopping center at W. North Ave. and Highway 100 what is claimed to be the largest in the country. It will cost more than $15 million and will have space to park 7,000 automobiles. The sponsors are Froedert Enterprises, Inc.

• **To purify Boston Harbor** — The Metropolitan District Commission of Boston has contracted with Charles A. Maguire and Associates to design structures and facilities and to prepare plans for the completion of a sewage disposal system to end pollution of the waters of Boston Harbor by 1958. Eventual construction on this contract will cost about $31 million, while the portion to be done by the commission itself is estimated at about $18 million. The system covers Boston and 32 adjacent and nearby cities and towns.

• **Centennial stamp**—A special commemorative stamp honoring the American Society of Civil Engineers centennial, will be issued by the Post Office Department during the week of Sept. 3 in Chicago.

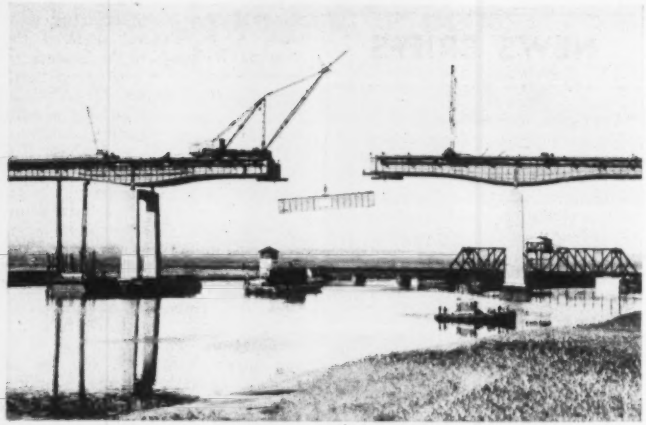
• **Interstate transit**—In his message to the 1952 New Jersey legislature, Governor A. E. Driscoll declared that progress is being made toward the establishment of a high-speed transit system in the Camden, N. J.-Philadelphia, Pa., area, and he also reported that studies are nearing completion on a northern New Jersey-New York system. Both projects would be undertaken on an interstate basis . . . The Port of New York Authority is prepared to spend $500 million, including $200 million for an entirely new Hudson River tunnel, to handle increasing vehicular traffic, according to Howard S. Cullman, chairman of the bi-state agency, who made this statement at the annual meeting of the commissioners Jan. 10. He also said that getting started on the $85-million third tube of the Lincoln Tunnel is the paramount problem with which the authority is concerning itself this year.

• **Contractors lose**—California has a new $7-million annex to her capitol building in Sacramento and the project has the unenviable distinction of having proved a money-loser for every contractor involved in the work. Swinerton & Walberg Construction Co., main contractors, are reported by state officials to have lost about $500,000.

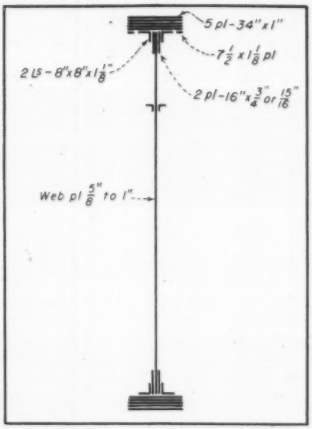
• **Power expansions**—American Gas and Electric Co., currently engaged in a $300-million construction program in seven states from Michigan to Virginia, announced plans for the largest electric generating unit ever built. So gigantic that it must be housed in a 12-story building, the unit will be located at Tanners Creek, Indiana. . . . To be installed in the company's Tanners Creek plant in Indiana, it is expected to have a capacity of 217,000 kw. . . . Carolina Power and Light Co. of Raleigh, N. C., plans to spend $22.5 million to expand power resources during the year.

• **Schools needed**—School needs in Michigan, particularly acute in the Detroit district, were estimated by the State Superintendent of Public Instruction at $369 million. His report is part of a survey for the U. S. Office of Education.

• **Big piping contract**—The M. W. Kellogg Co., refinery engineers and metal fabricators of New York City, have been awarded a $75-million contract for the field fabrication and erection of the process and auxiliary piping and related equipment in the two major gaseous diffusion units for the Atomic Energy Commission which are now well under way at Paducah, Ky.



HACKENSACK RIVER BRIDGE on the New Jersey Turnpike has a 375-ft girder span. Erection of a 100-ft long section between cantilevers completed each girder.



FLANGE AREA in main Hackensack girders is mostly in the cover plates.

Longest plate girders are twins—

Frederick S. Merritt
Associate Editor

THIS WEEK'S OPENING of the north section of the New Jersey Turnpike is as much a celebration of the completion of its Passaic and Hackensack River crossings as it is of the lengthening of this great traffic artery to its full 118 miles. It was the lack of steel to finish these bridges that confined the initial turnpike opening a month ago to the south 109 miles. With the present opening, the toll road now extends from the Delaware Memorial Bridge near Wilmington to the approaches to the George Washington Bridge at New York.

Completion of the two river bridges is, as a matter of fact, worthy of celebration, since each contains a 375-ft silicon-steel plate-girder span, setting a new U.S. record.

Incorporated in two long viaducts, just north of Newark, the long girder spans are parts of three-span continuous layouts. Girders flanking the main span are 275 ft long. In the Passaic River Bridge, they also cantilever 31 ft beyond the end piers to support the hinged ends of 189-ft girders over the Pennsylvania Railroad.

• **Record holders compared**—The river spans are 75 ft longer than the main span of the former U.S. record holder—the Charter Oak Bridge over the Connecticut River at Hartford, Conn. Also continuous, Charter Oak has plate-girder spans of 270-300-270 ft, which carry two lanes of traffic in each direction. Made of silicon steel, the girders are 17 ft deep over interior piers, 11½ ft elsewhere (ENR March 11, 1943, vol p 344).

The turnpike girders also are 45 ft longer than those in the simple-span bridge for pedestrians over the Harlem River, in New York City. But the 330-ft long members of this lift bridge still hold the world's record for length of simple-span girders (ENR Feb. 16, 1950, p 42). Made of silicon steel, they are only 10 ft deep.

The world's record for continuous girders is held by the main span of the Bonn-Beuel Bridge over the Rhine River in Germany, built in 1949. Part of a 1,263-ft box girder, it is 643 ft long and 9.8 ft deep at midspan. It carries a 40-ft roadway.

Different consulting engineers designed the Passaic and Hackensack River bridges, and different steel companies fabricated and erected them. Consequently, though they have the same span, the record-size girders are not identical. A comparison of the two girders with each other, as well as with shorter length plate girders, brings out some noteworthy dissimilarities.

• **Common features**—But first, let's see what these two members have in com-

New Jersey Turnpike completed.

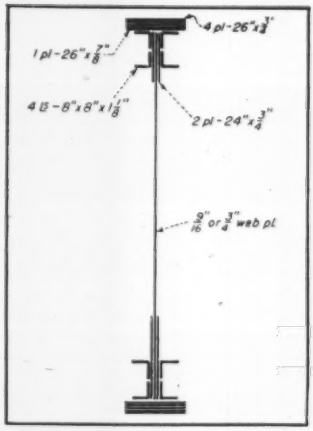
The final nine-mile section of New Jersey's new 118-mile toll turnpike was dedicated on Jan. 15, marking substantial completion of that great undertaking.

The new highway extends through almost the entire length of the state from the new Delaware River crossing below Wilmington, Del., northward to connections with the three main crossings of the Hudson River into New York—the Holland and Lincoln Tunnels and the George Washington Bridge. Fifteen intersections provide connections with other main highways. Four 12-ft lanes, separated by a median zone, are provided except for 22 miles through the metropolitan district at the north end where the highway has six lanes.

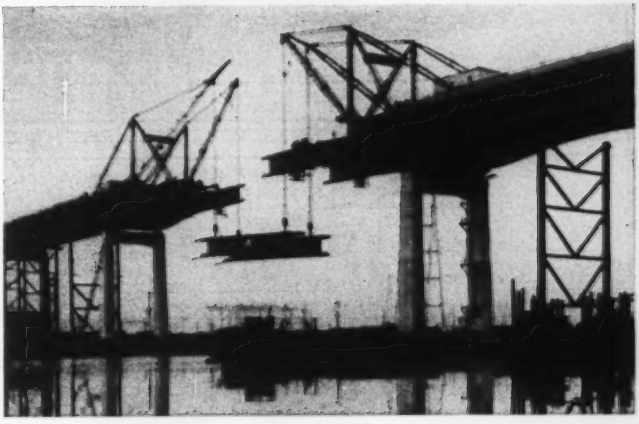
The pavement is largely bituminous concrete, designed for a 36,000-lb axle load. Portland-cement concrete is used on the bridges and viaducts and for part of the northern end.

Construction of the entire project, involving expenditures totaling about $213 million, was carried out in less than two years. The initial grading contracts were let in December, 1949 and January, 1950, but actual construction did not get under way until early in 1950. All the paving was done during 1951.

Other articles and major news items relating to the New Jersey Turnpike have been published in ENR as follows: Fast construction schedule, Oct. 27, 1949, p 36; Insurance companies take bonds, Feb. 23, 1950, p 24; Pile-driving techniques, Sept. 14, 1950, p 36; Pavement design, Nov. 23, 1950, p 35; Paving methods, Aug. 23, 1951, p 28; Hydraulic fill, Sept. 13, 1951, p 30.



FOUR ANGLES are included in the flanges of the main Passaic girders.



PASSAIC RIVER BRIDGE, also on the turnpike, has a 375-ft girder span, too. Two twin-boom derricks erected a pair of 115-ft sections to complete girders.

but with different parents!

mon and what thinking lies behind their design.

The two bridges accommodate two 36-ft wide roadways, for three traffic lanes in each direction. A 6-ft wide raised mall separates opposing traffic, and an open-grating walk flanks the outer edges of the roadways, so that the bridges are 86 ft wide. Vertical clearance over the river channel is 110 ft.

Appearance was a major factor in the design. The New Jersey Turnpike Authority hired architects Fellheimer and Wagner to assist the engineers in producing attractive structures. By mutual agreement, trusses and conspicuous bracing were ruled out. Also, deck construction was deemed desirable, to keep the structural members from obstructing the view.

In both viaducts, a floor system of rolled-beam stringers and plate-girder floorbeams with cantilever brackets carry the loads to two main girders (spaced 48 ft apart in the Passaic River crossing and 56 ft apart in the other). This design, the consultants say, renders the overall cost of bridge and approach viaducts more economical than a through structure.

• **Foundations differ**—Dissimilarities between the two bridges are noticeable from the foundations up. River piers for the Passaic bridge rest on rock. All other piers for both structures are supported on steel piles.

Tall piers were designed as rigid frames. They consist of two concrete shafts connected at top and bottom with concrete struts.

The Hackensack girders are fixed at one river pier, but free to move at the other river pier and end piers.

The Passaic girders are fixed at both river piers, but free to move over the end piers. These piers are sufficiently flexible to deflect under movements of the 375-ft span. This flexibility was also taken into account during erection of the main girders, in obtaining horizontal clearance for bolting the fixed shoes to the bottom flanges.

• **Key design factors**—In designing the girders for maximum economy, the consultants had to compromise between various factors affecting depth of member. Considerations of span rigidity, steel savings and flange size require a fairly deep girder, whereas fabrication, transportation limitations and erection economics were favored by shallow members. Similarly, fabrication, erection and shipping requirements, including prohibition of falsework in the river channel, affected locations of vertical and horizontal splices. Two of the largest fabricators in the country were consulted.

Their recommendations led to adoption of a maximum depth of about 14 ft in end and center spans. Fishbelly sections, about 125 ft long between splices, were made 22½ ft deep over the river piers.

• **Vertical field splices**—The fabricators also requested four vertical field splices in the center span and two in each end span. Obviously, the large number of splices made it impossible to locate all splices near points of counterflexure; some of the splices had to be designed to resist large bending moments.

With the number of splices recommended, maximum shipping length for the continuous girders was 130 ft, with a weight slightly over 100 tons. (The 11-ft deep, 127-ton Passaic bridge girder over the Pennsylvania railroad was shipped in one piece 178 ft long.)

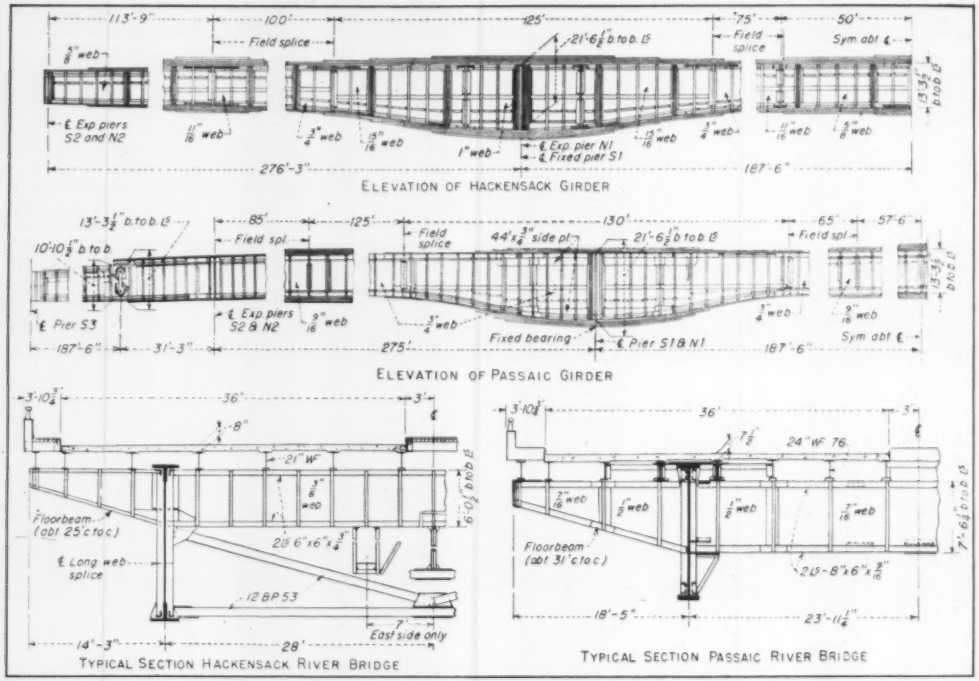
• **Horizontal web splices**—To meet railroad clearances, the haunched sections of both bridges, and all but two end sections of the Hackensack girder, each had to be shipped in two pieces, making horizontal field web splices necessary.

Transported in working position, the upper pieces of girder had very high centers of gravity. For easier handling, therefore, the horizontal web splice was placed as high as possible without making the lower pieces too deep for shipment with temporary top flanges.

• **Web design**—Web plates in the Passaic girders range in thickness from ⅞ to ¾ in. In the Hackensack girders, they vary from ⅝ to 1 in. in thickness. Design was based on theories outlined in a paper, "Theory of Elastic Stability," by Moisseiff and Lienhard, TRANSACTIONS, American Society of Civil Engineers, vol 106, p 1,052.

The thicker plates in the Hackensack girders are largely attributable to greater unbraced depth, because their flanges are not as deep.

• **More cover plates or angles?**—The


ELEVATION OF HACKENSACK GIRDER
ELEVATION OF PASSAIC GIRDER
TYPICAL SECTION HACKENSACK RIVER BRIDGE
TYPICAL SECTION PASSAIC RIVER BRIDGE

GIRDERS COMPARED—Though having the same spans, the continuous girders in the Hackensack and Passaic bridges differ in spacing under the deck, flange design, need for horizontal splices and location of vertical field splices.

Hackensack girders have a pair of angles in each flange. In contrast, the Passaic girders have two pairs of angles, plus deeper side plates, consequently deeper flanges.

Compared with girders of more conventional span, these flange areas are huge. They have to resist maximum bending moments of 44,000 ft-kips in the end span, 123,000 ft-kips over intermediate piers and 62,000 ft-kips in the center span. The largest flange area is 263 sq in. (Largest flange area in the Charter Oak Bridge is 163 sq in.)

Only a relatively small portion of the required area can be obtained with a pair of the largest standard angles rolled—8x8x1 $\frac{1}{8}$ in. And American Association of State Highway Officials specifications limit the cover-plate area to 60% of the total. The difference would usually be made up with additional angles and side plates.

Designers of the Passaic girders followed this conventional American practice. In each flange at the river piers, they placed four 8x8x1 $\frac{1}{8}$-in. angles, two 44x $\frac{3}{4}$-in. side plates and five 26x1-in. cover plates.

Designers of the Hackensack girders questioned the desirability of the limitation on cover-plate area for this type of structure. Investigating European practice, they found long-span girder bridges abroad with up to 88% of the flange area in the cover plates. Hence, over the interior piers, they called for two 8x8x1 $\frac{1}{8}$-in. angles, two 16x $\frac{3}{4}$-in. side plates, five 34x1-in. cover plates and two 7 $\frac{1}{4}$x1 $\frac{1}{8}$-in. cover plates alongside the flange angles. Of the total flange area, 77% is in the cover plates, whereas 49% of the flange area in the Passaic girders is in the covers.

With the Hackensack design, less steel is required, since the center of gravity of the flange is farther from the neutral axis than that of a flange with four angles and deeper side plates. Furthermore, the designers say, the wider cover plates are easier to splice and provide greater transverse strength during erection.

• **Fabrication**—Despite the size of these girders, they were generally within the limitations of shop fabricating equipment. There were a few exceptions, however:

The 34-in. cover plates of the Hackensack girders were too wide for the throats of hydraulic riveters; so a special driving procedure had to be used for web rivets. Web plates, too deep for multiple punches, had to be single drilled on gantry reamers. Also, the 21 $\frac{1}{2}$-ft depth of the fish-belly sections was too great to permit them to be handled in vertical position under the cranes.

Where the depth of the Passaic girders exceeded the width of reaming gantries, the fabricator developed a portable reaming gantry. It used the edges of the cover plates as a track. For haunched girders with curved cover plates, he had to resort to radial drills.

Holes in the heavy silicon steel plates were drilled after material was assembled. In this way, one drilling operation took care of the full thickness in an assembly.

To accomplish this, the shops predrilled in each piece sufficient holes to bolt the various elements securely together. Then, the rest of the holes were drilled—the web-flange holes, for example, through two angles, two side plates and the web plate in one operation, and cover-plate holes through the flange angles and all covers in one step.

Grips of rivets in the heavy flanges became quite long. In the Passaic bridge, high-strength rivets had to be used at splices.

Bearing stiffeners were field bolted in place full length, but the fabricators were permitted to field splice intermediate vertical stiffeners at the

horizontal web splice. This enabled them to attach the stiffeners to each girder half in the shop; without them, the girder pieces would have had little or no stiffness during shipment or erection. Auxiliary bearing stiffeners were attached temporarily to receive interior-pier reactions prior to placing the full-length bearing stiffeners.

For additional stiffness, the Hackensack girder halves were shipped with temporary flanges along the longitudinal-splice edges. These flanges generally were left in place until the girders were assembled or erected.

It is customary in fabricating continuous members to ream field-splice holes with connecting girder sections assembled in no-load cambered position. However, in view of the great length of these spans, the fabricators were not required to assemble the complete structure, but only as such as equipment and space permitted.

PORTABLE GANTRY riding on cover plates was rigged up by Bethlehem Steel Co. for reaming 14-ft deep girders of the Passaic River Bridge.

• **Shipping problems**—Principal difficulties in moving the girders from shop to site were due to the height of center of gravity of the girder pieces and the need for special supports for the lower sections of the haunched girders, due to the curved bottom flanges. Costs were increased by the extreme heights of some of the girders, which necessitated a considerable amount of special bolsters, drawbar extensions, swinging bolsters and special train movements.

Most difficult of the Hackensack girder pieces to transport were the end sections. Shipped full depth, weighing 103 tons, each section had its center of gravity about 8 ft above the top of rail.

To ship the Passaic girder sections, other than the fish bellies, in one piece, the steel company could not use flatcars. Instead, it transported the sections on trucks alone. These were placed about 20 ft in from the ends of the girders, and extensions to the drawbars inserted.

• **Erection methods differ**—Near the bridge site, most of the girder sections were shifted to barges. At the job, upper and lower pieces were assembled so that they could be erected full depth. Hackensack haunches, however, were spliced on top of the piers. Travelers supported on framing already in place erected the girders.

For the Hackensack girders, the steel erector used a 100-ton stiffleg derrick. First, he placed the viaduct steel up to the center section of the river span; then, he dismantled the derrick, assembled it on the other side of the river and erected the rest of the bridge from that side.

For the Passaic girders, the steel erector used two twin-boom travelers —one on each side of the river. Each consisted of two 115-ton stiffleg derricks mounted on a common platform. When the booms worked together, as they did in lifting the 173-ton haunched sections, the falls were hooked to a 10-ft balance beam, which was pinned to a hitch (10-ft long, 36-in. 300-lb wide-flange beam) on the girder top flange.

• **Cantilever erection**—Temporary steel bents supported the ends of the girder sections in the end spans, until field splices were completed. Cantilever erection was necessary, however, over the river channel.

The fish-belly sections, when erected, projected about 65 ft beyond the piers. A second section then was added to each of the ends and the derricks were moved to the cantilever ends to erect the closing lengths—100 ft for the Hackensack bridge and 115 ft for the Passaic bridge.

At this time, the cantilever ends were not at their final elevations or the proper distance apart for inserting the closing spans. To raise these ends to the correct position, the steel erectors left off the shoes at the end piers and tilted the girders about the river piers.

In further positioning of the Hackensack girders, the steel erector jacked them back over the expansion shoes. For the Passaic bridge, which has fixed shoes at both river piers, one set of girders was slid back over the greased tops of their river-pier shoes (flanges had not yet been connected to the shoes). The link connections at the far ends of the girders allowed ample room for this 2½-in. movement.

The cantilever ends carried temporary bracket supports for the closing spans. For the Hackensack closure, one girder section was erected at a time. The Passaic span, on the other hand, was closed with the insertion of the two sections together. With the four booms of the two derricks being used for the operation, deflections of both pairs of cantilever ends were equal.

To bring splice holes into alignment, the cantilevers were again rotated slightly about the river piers and slid forward. Then, splice material was attached and the girder ends jacked off their temporary supports and onto their permanent shoes.

The Passaic girders, at this stage, still had to be connected to the fixed shoes at one of the river piers. This was accomplished with horizontal jacks, bending the flexible piers until the bolts could be placed to join the shoes and the bottom flanges of the girders.

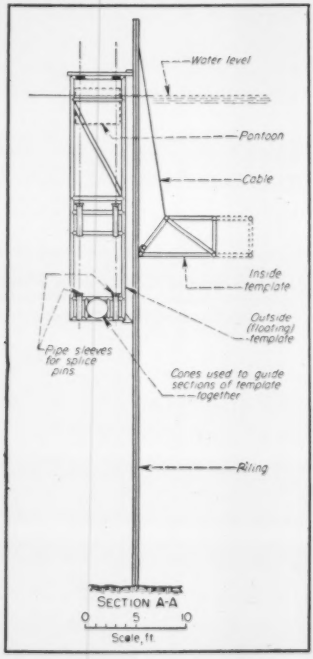
Erection of floorbeams and stringers followed conventional practice.

• **Bridge costs**—Cost of the 6,955-ft long Passaic River viaduct is $13,700,000 and of the 5,623-ft long Hackensack River viaduct $9,500,000. Greater unit cost of the former—$22.92 per sq ft of deck, compared with $19.55—is due to less favorable alignment and greater interference with construction by railroads and utilities.

Howard, Needles, Tammen & Bergendoff were in charge of development of final plans for and construction supervision of the Hackensack River Bridge, and Ammann & Whitney for the Passaic River Bridge. The Hackensack spans were fabricated and erected by American Bridge Co., and the Passaic spans by Bethlehem Steel Co.

Paul L. Troast is chairman of the New Jersey Turpike Authority, W. W. Wanamaker, executive director, and Charles M. Noble, chief engineer.

70-FT CELLS in UPSTREAM COFFERDAM mount 40-ton revolving gantry crane and a concrete mixing plant. Downstream cells measure 50 ft across. Power plant is expanding riverward. (TVA photos)

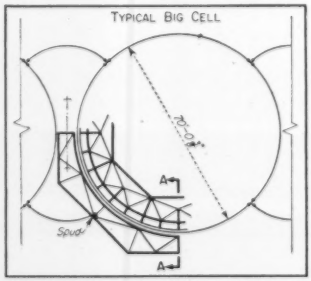


Template takes trouble out of

O. R. Bengston
Tennessee Valley Authority
Knoxville, Tenn.

Cofferdam cells exceeded only once in size were used by the Tennessee Valley Authority for dewatering a non-overflow length of Hales Bar Dam, below Chattanooga on the Tennessee River.

Four 70-ft diameter cells formed the upstream cofferdam for removal of this portion of the 36-year-old dam in a current power plant expansion. To serve the same purpose—power expansion—two cells exceeding 76 ft in dia have recently been used in the Connecticut River at Holyoke, Mass. (ENR Jan. 10, p. 32).

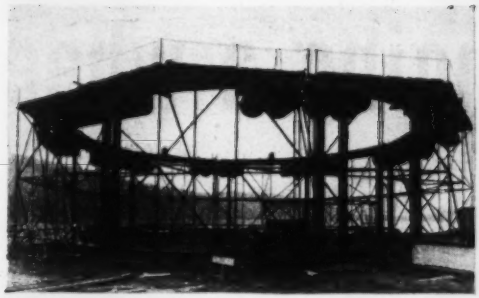


TEMPLATE DETAILS are simple enough. Inner one hangs on piling.

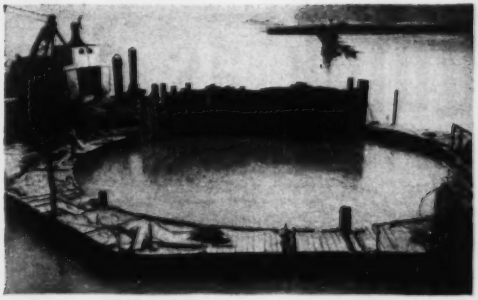
Added power at Hales Bar will come from added head. The old dam has had a crest rebuilding recently that added gate control and water power to turn two new 24,300-kw units due to go on the line early this year. It is these units that were built behind the cofferdam of oversized cells.

• **Tricky template**—Key to success in accurately driving the large diameter cells in 50 ft of water was an elaborate exterior template, used in conjunction with a light, special inside template. This structure of welded pipe fabrication gave a positive support to piling as it was placed in the cells.

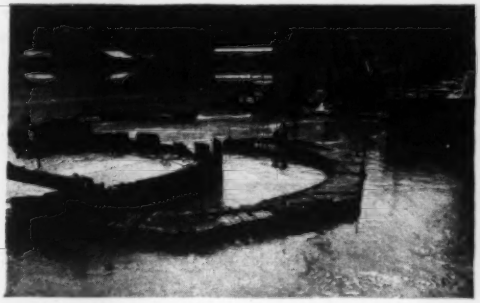
Putting the main template outside



BIG CAGE keeps sheet piles from going astray as they are driven in deep water at Hales Bar Dam. Inner template can be seen on ground inside. Heavy verticle members are guides



THREADING THE SHEETS—Floating outer template makes fine work platform. Note T-sections in place in foreground. Barge-mounted crane handles hammer.



OFF TO THE NEXT CELL—Outer template floats clear in two sections as inner template is lifted to top of finished cell.

CELL FILLING by dredge line through a rotary screen was meant to remove fines and admit only free draining material.

driving 70-ft cofferdam cells

the sheets made it easy to handle and more easily secured to the dam or to a completed cell. The outer template was built in four sections so keyed together that they could be joined easily while in the water. Pontoons, built into the upper part of the template gave it desired buoyancy, and a board floor on its top made an exceptionally good work platform all around the cell.

One spud in each section of outer template held that section in place while it was anchored. Vertical members were built into the structure at appropriate positions around its circumference to serve as guides in driving T sections of piling for joining connecting arcs.

• **How it worked**—Here was the procedure for cell construction: The outer template was floated into place, assembled and anchored. Four T-sections of piling were threaded into the guides and driven to rock. These T's served to keep piling vertical and to maintain proper spacing. The inner template was then suspended from tops of these T's. The remainder of the piling was then threaded into place and driven with steam hammers handled by barge mounted revolving cranes.

Cells were partially filled before templates were removed. Fill material was river gravel dredged a short distance below the dam and delivered to the cells by pipeline.

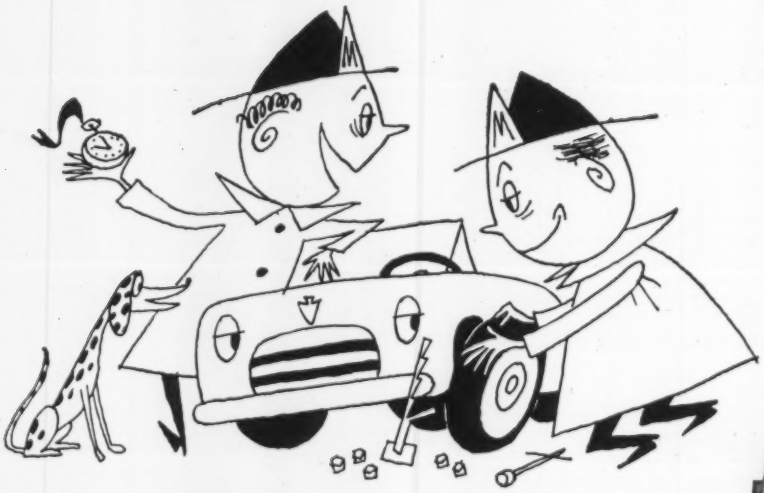
A free draining fill was desired to keep the saturation line down in the cells, for maximum shear resistance in the fill material and minimum stress on the piling. To achieve this by removing some of the fines, the dredge line was set up to discharge through a rotary screen mounted above the cell. The screening operation was not very efficient, but probably 50 percent of the minus 4-in. material was removed.

When space behind the cells had been dewatered and excavated to rock a continuous concrete toe was doweled to the rock and poured along the base of the cells as an added precaution against their kicking out at the bottom. The concrete was formed with a channel in its top surface for carrying seepage to the sump.

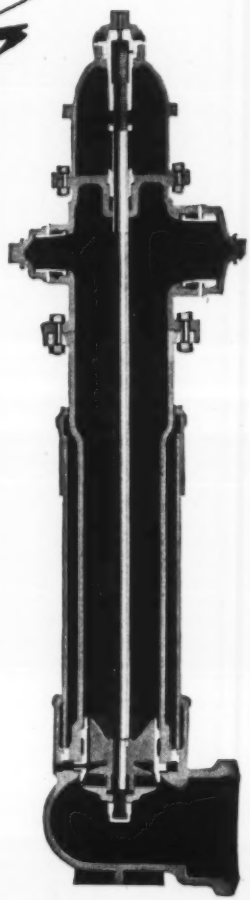
Cofferdam and templates were designed by R. S. Blomfield and G. E. Cate, of TVA's construction plant branch, under supervision of the writer and J. F. Partridge, construction plant engineer. Details were developed after consultation with A. H. Weber and H. D. Towers, project manager and construction superintendent at Hales Bar when the work began. All field work was done by TVA forces.

Hales Bar Dam was built in 1915 and bought by TVA in 1939. Serious leakage through its limestone foundation caused a major grouting job to be done in 1941 (ENR Nov. 6, 1941, p. 78). Since then its open crest has been cut down and rebuilt higher by addition of 17 tainter gates for added control and more head behind the structure. This latter improvement was described in ENR Oct. 19, 1950, p. 37.

Quick as changing a wheel



When a Mathews Hydrant is broken in a traffic accident, two men can put in a new barrel in a matter of minutes—*without excavating*. Speed of replacement is important when community safety is at stake.



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SUPER COMPACTOR works subgrade for new 8000-ft runway at Brunswick, Maine, Naval Air Facility.

Navy's master jet base bursts its bounds

When the Navy decided to make its World War II air station at Brunswick Maine into a master jet base, it had to contend with a tight geographic condition.

The objective was to get one 8000-ft runway where two 6000-ft runways and one 4500-ft one existed. Unfortunately extension either way of any existing runway figured to be more costly (because of heavy rock excavation) than building a brand-new runway in a new direction.

• As it turned out, the location chosen crossed a creek, calling for a substantial fill and a "culvert" 2,240 ft long.

The culvert, a triple-barreled—72-66- and 66-in—conduit, was the key to construction speed because priorities had to be obtained for its 340 tons of reinforcing steel, and concrete-pipe manufacture had to be started to assure on-schedule deliveries.

• **1951 completion**—The Navy's air arm had set a tight schedule for the Bureau of Yards and Docks to meet with its construction. Brunswick was to be one of four principal jet bases in continental United States—all to be complete by the end of 1951. Design for Brunswick work began early in the year and bids were scheduled for mid-June. In anticipation of the work, contracts for conduit pipe were let early in April to Hume Pipe Co., and New England Pipe Co., both companies having plants in the Boston area.

The $3,336,000 runway contract was awarded June 26 to the low bidder, W. H. Hinman Construction Co., North Anson, Maine, work getting under way July 1. In addition to the 8,000-ft runway, work included a full-length taxiway, and aprons around existing hangars. The existing east-west runway was to be kept in service (any 3,000 ft of it had to remain operational throughout construction); the other two were to be abandoned, partly because they would not intersect the new runway at proper grade.

• **The runway**—The new runway consists of 7,000 ft of flexible pavement and 1,000 ft (500 ft at each end) of concrete. The area is cleared and graded to a width of 1,500 ft, in a zone extending 1,000 ft both ways beyond the runways.

Cross-section in the bituminous stretch consists of 200-ft paving width flanked by 150-ft bituminous stabilized shoulders (9 in. of selected material topped by 2 in. stabilized with asphalt).

Pavement is a 3-in. two-course bituminous concrete over 6 in. of dry-bound macadam (3-in. stone with ¾-in. choker stone). Beneath this is 11 in. of gravel sub-base, compacted in two layers. Fill is native cut or borrow material compacted in 8-in. layers. Compaction is 90% in all but the last 12 in., which requires 95%.

Because of the soil's granular nature, smooth-wheel rollers provided compaction. In fills a super-compactor did the job, and in the sub-base trains of small pneumatic straight-wheels did it.

At the runway ends, concrete pavement 10 in. thick not only covers 500 ft of runway length, but also extends,

BRUNSWICK NAVAL AIR STATION

During World War II the Navy took over a small WPA-built airfield southeast of Brunswick, Maine, expanding it into a Naval Air Station complete with hangars, shops, barracks and quarters.

After the war the Navy turned the station to other uses. The buildings housed a branch of the University of Maine for a time. Operational facilities served as a port for Northeast Airlines, which stopped at Brunswick up to the time the Navy decided to recommission Brunswick.

While airfield work was the largest part of rehabilitation, this project also involved building repairs: $777,600 by Stewart-Williams of Augusta and T. W. Cunningham of Bangor. Roof repairs were most extensive. A new facility is a 750,000-gal jet fuel storage area. Site preparation in the fuel storage area, costing $411,600, was done by Sanders Engineering Co., Portland, Me. The tanks will be finished by Hammond Iron Works.

As to further expansion at Brunswick, naval officials say "Future plans permit the construction of a second long runway, parallel to the first." This work will begin soon.

NON-AGITATING concrete truck loads bucket for placing concrete in Mare Brook conduit's foundation mat.

MARE BROOK CONDUIT, 2240 ft long, runs diagonally across main-runway's 1500-ft cleared zone. (ENR photo)

at 150-ft widths, a distance of 362½ ft to the parallel taxiway, whose 75-ft width also is concrete in its end 500 ft. The connection is an airplane holding area.

• **Steel conservation**—These concrete zones contain what Naval designers call " a little experiment in steel conservation." The middle zone of both runway and taxiway (200 ft of length) is of plain concrete, steel mesh having been omitted. The 150-ft zones on either side of the plain concrete, as well as the holding area, do have mesh in them. The idea is that the mesh in the end zones will take care of temperature stresses near the free edges, while sub-grade friction in those zones will be sufficient to confine the middle-zone concrete and prevent damage due to temperature expansion from occurring.

Mesh in the holding area is there to resist damage from the vibration and hot exhaust of warming-up airplanes.

Aprons around the hangar are plain concrete. They replace and enlarge existing aprons, which were tar mix over soil-cement base. Subgrades for concrete pavement are similar to those for bituminous.

• **Major quantities**—Work at Brunswick included clearing 112 acres; 73,500 cy grubbing; 1,200,000 sy fine grading; 99,000 cy base material; 10,000 cy selected backfill; 16,000 cy excavation for the culvert; 42,000 cy crushed stone sub-base; 45,000 cy of 10-in. concrete pavement; 40,000 tons asphaltic concrete; and 22,300 cy stabilized shoulder material (134,000 gallons of asphalt in this.)

Work also included 20,000 cy of trench excavation; 52,000 lf of cable in trench; 4100 lf of underdrain; 2,790 lf of concrete pipe, 12 in. to 42 in. Mulch amounted to 850,000 sy; loaming (6 in.) was 616,000 sy.

To develop 109,000 cu yd of fill material, the excavation sub-contractor, J. R. Cianchette, Inc. of Pittsfield, Maine, hired a suitable borrow pit next to the naval property and worked it with a belt loader and trucks. A notable feature of excavation work was the excellent maintenance of haul roads.

Crushed stone, 42,000 cu yd of it, for sub-base came from a Town of Brunswick quarry, also adjacent to the air base, in which Cianchette installed a portable crushing plant that could turn out 1,000 cu yd a day, working two shifts. Outside of the conduit zone, earthwork was completed by the end of September.

• **Long conduit**—While the Navy worked on priorities for reinforcing steel, Hinman started his 16,000 cu yd of excavation for the 2,240-ft conduit. The stream to be boxed, Mare Brook, meandered across the south end of the new runway, in a general direction 45 deg from the runway axis.

COMPACTION CONTROL — Coupe with lab equipment in storage space went out on fill to make quick tests. (ENR photo)

To be topped by a maximum 25-ft fill, the concrete pipes were cradled on an 18-in. reinforced concrete mat 24 ft wide. This mat, in turn, rested on 2 to 4 ft of granular materials that had been placed and compacted in a trench excavated out of native clay.

Concrete pipe was trucked to the site and placed by crane after the mat was ready.

Mat concrete was placed by bucket, loaded out of non-agitating concrete trucks that Hinman brought from his Freeport by-pass paving job (ENR Nov. 29, p. 38). The plant for mixing and loading concrete into the trucks was similar in principle to the one at Freeport. It consisted of a batch bin, a trolley batcher that charged the skips of two 16S mixers. Mixers loaded regular concrete hoppers (hoppers were concrete buckets at Freeport) which loaded trucks.

• **Paver comes to Maine**—The Freeport job figures curiously in the Brunswick paving. In tooling up for the Freeport job, Hinman chose his concrete method partly because there was not a paver in Maine, and the by-pass was too short (3 miles) to warrant bringing one in.

Soon after work got under way at Freeport, Hinman got the Brunswick job, involving about six times as much concrete pavement, together with a construction schedule that would require faster mixing than the Freeport setup would handle.

So Hinman brought in a 34E double-drum paver, together with a complete spread for laying 25-ft width slabs. (He had to go to Arizona to get them). Machines that rode on the header forms included a subgrade

APRON REPLACEMENT at hangars involved removal of tar mix surfacing and soil-cement base material. (ENR photos)

ROLLER TRAIN gave proper compaction to granular soil of apron area's base course. Apron is plain concrete 10 in. thick.

planer, a concrete spreader, a sliding-plate finishing machine, a bridge for setting slugs, a mechanical float, a combination belt-finisher and curing sprayer, and several bridges to carry men doing hand work.

Batches for the paver came from a plant at a railroad siding near the north end of the big runway.

• **Bituminous work**—Aggregate for runway macadam and bituminous concrete also came to the job at the siding, the hot mix being prepared at a plant that was set up there. The crushed stone, for macadam, and the paving were placed with bituminous pavers.

• **Apron demolition**—In preparing the old hangar apron areas for concrete paving it was necessary to remove the tar-mix surfacing and its soil-cement base. This was accomplished by dropping a busting ball on the surface at about 5-ft spacing both ways, then getting under the edge with a toothed bulldozer. The bulldozer broke and piled the weakened material and a shovel loaded the stuff into dump wagons.

Naval civil engineers noted a curious type of failure in the old apron material. In square pattern, at almost uniform 18-ft spacing both ways, a crack-heave had developed in the surfacing during the 7 years since original placement. This would seem to indicate that, while homogeneous throughout, the soil-cement base has significant temperature or moisture-expansion properties. In some old runway areas, where tar mix was placed on compacted gravel, this type of failure did not occur.

• **Quality control**—Testing for control of fill, base and bituminous pavements was conducted continuously by Thompson and Lichtner, Boston consultants.

• **Management**—Officer in charge of construction for the Bureau of Yards and Docks is Captain Henry J. Fitzpatrick, CEC USN First Naval District Public Works Officer. At Brunswick, Commander Kenneth E. Pearce CEC USNR is resident officer in charge of construction, aided by Lt. Raymond Hodge, CEC USNR.

Philip Corey is general superintendent for Hinman, and John Rice is field superintendent.

Heated highway proves impractical—ramps, maybe

Michigan State Highway Department and the Detroit Public Lighting Commission have been experimenting with electrically heated strips of highway one block long on Eight Mile Road to rid the surface of snow as fast as it falls. After two years it is evident the use of electricity for this purpose is far in the future.

Primarily the test was begun to determine the feasibility of the method to rid ramps leading to and from the Edsel Ford and John C. Lodge expressways now under construction in Detroit. One lane of traffic on each side of Eight Mile Road is being used. Electrical grids are buried two inches below the surface. Thermostatic control turns the heat on and off as weather varies.

Through two mild winters the test strips showed up successfully to rid the highway of snow. But this year's snowfall of approximately 17 in. in a short time proved the system inadequate.

Heavy snow and low temperatures prevented the installation from removing the snow rapidly. Cost of installation and operation do not warrant the use of the method on expressway ramps. This is the State Highway Department's decision.

• **Optimistic**—Detroit's PLC believes the situation more encouraging. The electrical grid has a place on expressway ramps, Harold F. Wall says. The Eight Mile Road lanes are a test on a flat surface. Wet snow is tossed about by cars passing continually and water does not drain off readily.

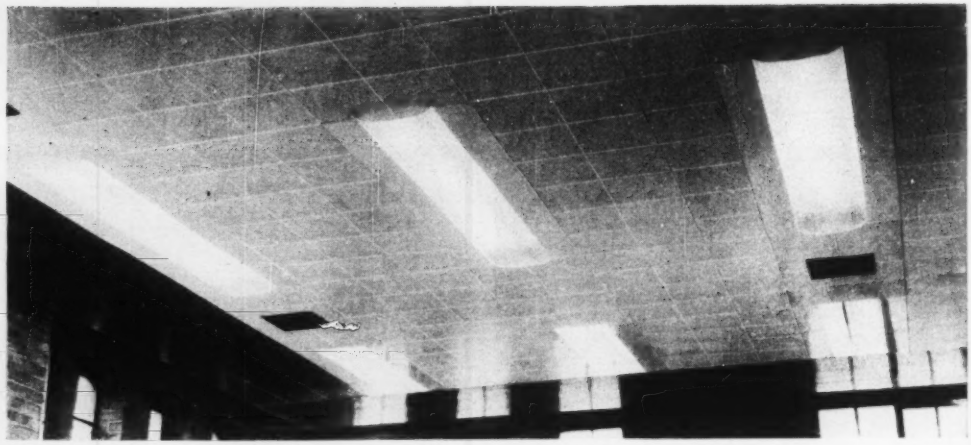
To prove a point in favor of ramp installation electrically heated grids have been used on approaches to a PLC garage. The snow melts as fast as it hits the ground and the water drains away quickly. A few minutes after a snow storm the garage approach is cleared and dry. This is likely to be true on expressway ramps.

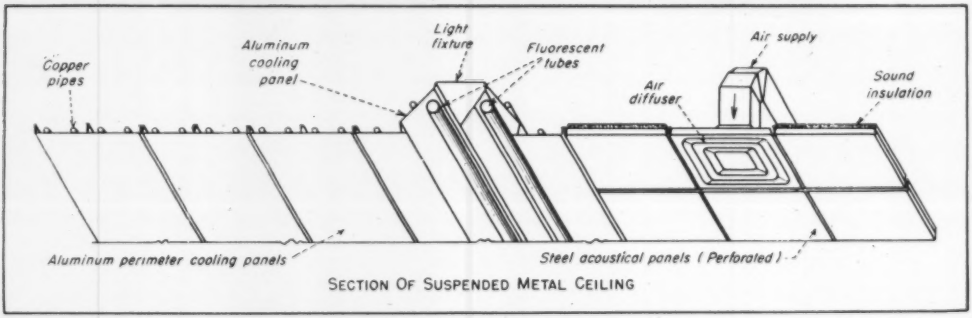
The Eight Mile Road test lanes have been operated at a cost of 90 cents an hour per strip. This amount is 10 cents a strip less than the PLC's cost estimate.

Detroit Edison Company keeps downtown sidewalks clear of snow at a cost of four cents a square foot per year by the use of steam pipes under concrete. This experiment has been successful but its application on highways may be discounted because of the long lines of pipe needed. This would be too costly.

Most extensive use of piping carrying a heated anti-freeze solution is on ramps of Port Authority Bus Terminal in New York City.

The snow plow and the use of salt will continue as means of removing snow obstacles for years to come.





SECTION OF SUSPENDED METAL CEILING

ALUMINUM PANELS in the ceiling (dark area) around the outer walls and lighting fixtures of a new annex to the Manufacturers Life Building in Toronto, Ont., are backed with copper tubing through which chilled water circulates, to cool office areas.

Ceiling panels cool office building

Next summer, comfort conditions will be maintained in a big office building in Toronto, Canada, principally by a water-cooled ceiling.

About 60% of the heat load in an 11-story annex to the Manufacturers Life Insurance Co. Building will be handled by water, only 40% by air. While the water-cooled ceiling could have been designed to take the full heat load, air had to be supplied anyway for ventilation and it had to be conditioned for humidity control.

To counteract sun load on exterior walls, chilled water will be circulated in copper tubing attached to narrow aluminum ceiling panels around the perimeter of the building. Similar panels are being built into lighting fixtures. Principal purpose of these is to remove heat thrown off by fluorescent tubes. And panels under windows will cool in the summer, heat in the winter, balancing heat gain or loss through the windows.

Cooled air is supplied mainly for ventilation. Ducts are small, air velocities low. Relative space and equipment requirements also are small. Net result is a saving in initial cost for the cooling installation.

• **Building interconnected**—The annex is being built at a cost of $5,000,000. To be completely integrated with the older, 6-story main building, it will add 140,000 sq ft of floor area to the 60,000 sq ft in the existing structure.

The 11-story building is 104x154 ft in plan. Floor-to-ceiling height is 13 ft, so that floors and ceilings in the old and new structures line up. They are, however, separated by expansion joints.

The structural frame is steel. It is all-welded, to eliminate the noise of riveting, which would be disturbing to the company staff and neighbors.

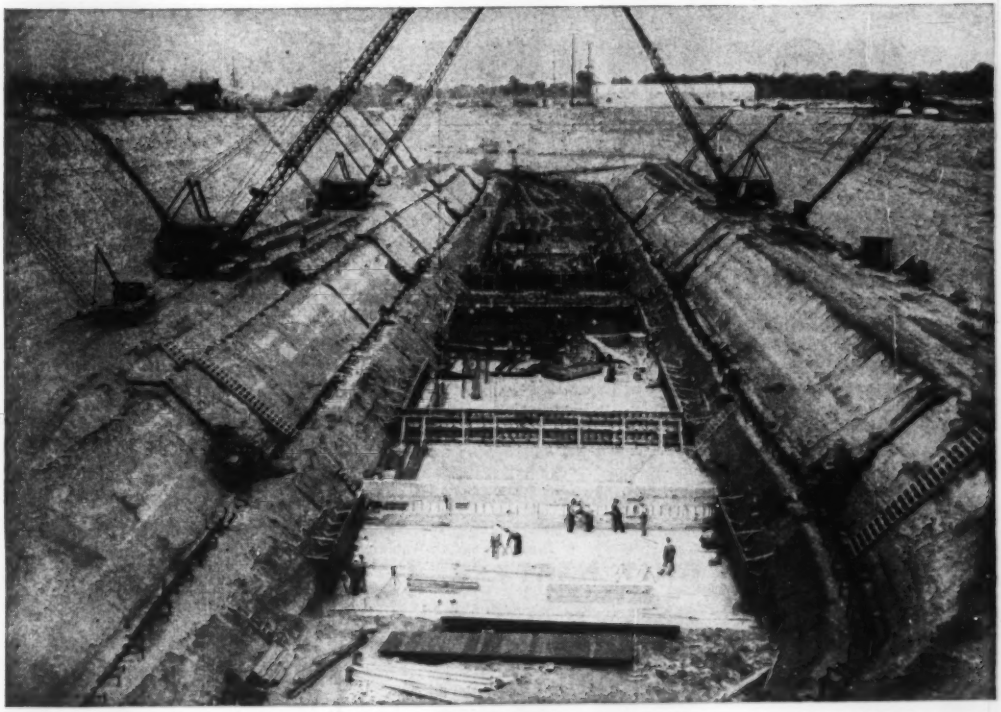
Limestone facing is being applied to the exterior, mainly because it was used for the main building. On the inside is brick backup, cellular-glass insulation blocks and metal-furred plaster finish.

Floors are concrete. They will be covered with many different materials —rubber tile, linoleum, wood, asphalt tile and carpeting. There is almost no floor plumbing; nearly all fixtures will be wall-hung. Ducts for electrical distribution are placed 6 ft apart in the floor and permit tap-ins at 2-ft intervals. Partitions will be steel.

For interfloor movement of personnel, four passenger elevators are being installed initially, with space being provided for four more. A freight elevator also is being installed. These elevators will serve both the new and old buildings. Two existing

(*Continued on page 43*)

STANG WELLPOINTS DO "IMPOSSIBLE" IN EXCAVATION FOR BIG POWER PLANT



Excavating 342,000 cubic yards of saturated soil alongside the Ohio River for 600 ft. x 144 ft. building foundation at the new $73,000,000 Joppa Steam Electric Station in Illinois presented the builders with a major engineering challenge.

The principal problem was to dry the excavation and keep it dry, so that the operation of the tractor-scrapers could meet the tentative three-months deadline when concrete pouring should begin.

Original grade 350 ft. elevation. Lowest subgrade elevation 280 ft. Excavation commenced during heavy daily rainfall, with Ohio River overrunning its banks only 300 ft. distant.

A line of Stang wellpoints was installed first at elevation 312 ft., then, when the ground water level was lowered, a second line was installed at 295 ft., operating 24 hours a day.

By using Stang wellpoint equipment, concrete pouring began just 99 days after start of excavation.

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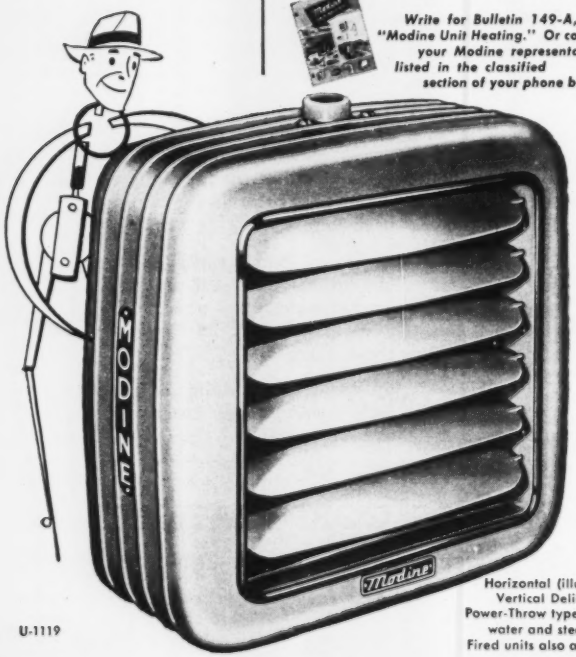

Horizontal (illustrated), Vertical Delivery and Power-Throw types for hot water and steam. Gas-Fired units also available.

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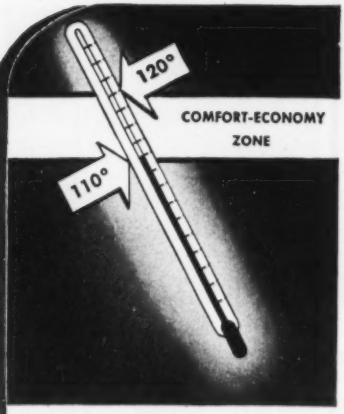
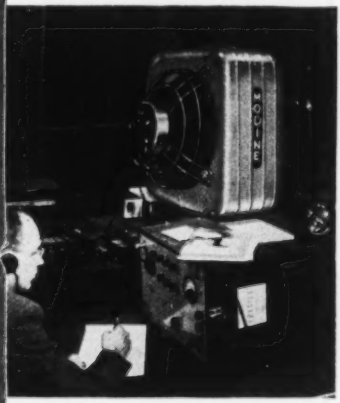
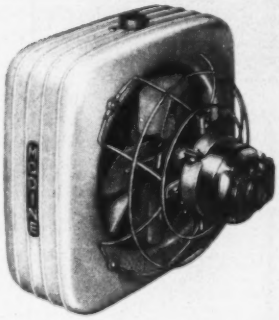


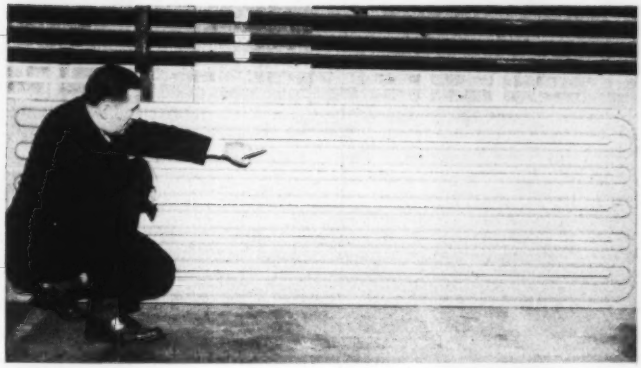
Discharge air temperatures of 110°-120° F. are correctly related to air velocities—assure perfect heating comfort plus lower fuel costs.



Sound-silencing features assure quieter operation—certified by accurate laboratory sound ratings. Especially important for commercial and institutional use.



Sturdy, steel, integral fan guard offers safety from exposed fan — serves as a resilient, vibration-absorbing mounting for the unit's motor.



PERIMETER PANEL has water tubes attached on the top side. This tubing is deformed for greater thermal contact. Under-window panels are similar, but smaller.

LIGHTING FIXTURE also has water tubes attached on the top side.

(*Continued from page 40*)
elevators in the old building will be removed and new floor slabs placed in the shaft area, to create additional office space. Interfloor correspondence will use a vertical conveyor.

• **Double windows**—For added insulation, two sets of aluminum windows are being installed in each window opening throughout the annex, and a set is being added to each window in the old building. There will be no metal-to-metal contact between the pairs of windows, thus eliminating the possibility of condensation from this source.

The windows are casement type, not permanently sealed, as in some of the newer air-conditioned buildings. To meet window-cleaning requirements and emergencies, they may be opened by a series of three handle-type fasteners.

• **Cooling problems solved**—The novel panel-cooling system being installed in the new building was developed by Charles S. Leopold, consulting engineer, Philadelphia, Pa., in experimental work with Bohn Aluminum & Brass Corp. This installation is the first full-scale application, though panel-cooling has been in daily use in the Time-Life Building in New York City on a smaller scale for four years.

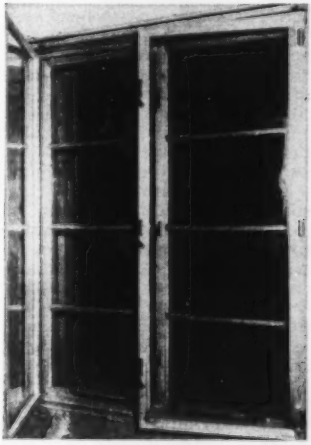
The system was designed to solve several air-conditioning problems: (1) How to squeeze in all needed air ducts and fan rooms without adding too much costly cubage to the building. (In some recent structures, cubage increase was as high as 17%, exclusive of cooling tower and machinery rooms. (2) How to handle the great heat load due to electric lighting providing high-standard illumination. (3) How to get heat economically under every window. (4) How to minimize the number of costly individual controls.

• **Air requirements cut**—Panel cooling is designed with two basic facts in mind:

1. More than half the heat load on the average office air-conditioning system is radiant energy from the sun or from lighting fixtures.

2. To do the entire cooling job by air, conventional systems must distribute from two or four times as much air as is necessary for good ventilation. Either greatly increased duct sizes or uneconomically high velocities are required.

Leopold's system distributes through small ducts at economical velocities only the amount of 60-deg air actually needed for good ventilation. This normally amounts to about 0.4 cfm of air per sq ft of floor area, or about 40% of the usual air supply. Thus, in the new building, air does about 40% of the cooling, the remainder being done by aluminum panels cooled by circulating chilled water. Tests have proved that with panel cooling, water flowing through a ¾-in. pipe can carry off more heat than the air from a 100-sq in. duct.



TWO SETS of casement windows are being installed in each opening.

• **Metal panels**—For circulating the water, copper tubes ½-in. in diameter are placed 6 in. on centers on the upper side of aluminum ceiling panels and on the wall side of aluminum under-window panels. Tubes are deformed to provide greater thermal contact with the panels.

The high conductivity of aluminum makes the panels instantly responsive to changes in water temperatures to meet changes in heat load. The aluminum is only 0.062 in. thick.

A 3-ft wide strip of cooling panels is being installed around the perimeter of the building in the ceiling. It is integrated with suspended acoustical tiles that form the remainder of the ceiling. Panels also could have been perforated for acoustical purposes, but the designers concluded that the acoustical tile would give sufficient control.

Chilled water also will be circulated behind recessed fluorescent fixtures. These luminaires will provide from 30 to 70 ft-c of illumination. Each contains two instant-starting fluorescent tubes from 4 to 6 ft in length.

Cooled luminaires not only remove as much heat as possible at the source but also pick up radiant, conducted and convected energy. And the ceiling pattern is simplified by use of one element to do the work of two.

Water will be introduced into ceiling tubes at a minimum of 63 F—safely above the dewpoint, which will be maintained at 55 F. It will pick up an average of 3 to 4 deg in keeping

panel temperature steady. Maximum water temperature in the perimeter panels will be 75 F.

Panels placed under the windows are about 4 ft long and 2½ ft high. They serve a double function—cooling in summer, with water at a minimum of 63 F, and heating in winter, with water temperatures up to 160 F. Object of the panels is to balance radiation from the glass above, minimize down drafts and maintain the mean radiant temperature on the window side about the same as on the other walls.

For air conditioning, one outlet is provided for every 100 sq ft of ceiling. Office layout changes that may be necessary in the future can be made without change in the air-distribution system.

Refrigeration equipment (located in a garage and boiler house 132 ft away from the annex, to which there is an underground connection) includes an 800-ton centrifugal compressor and a chiller. Other conditioning equipment is in the basement and in a penthouse on the annex.

• **Temperature control**—In a climate that has a normal temperature range from zero to 95 F and extremes ranging from −17 F to +102 F, the Manufacturers Life installation is designed to maintain 75 F to 76 F in summer, with 50% relative humidity, and 72 F to 75 F in winter, with 30% relative humidity.

Temperature in the under-window panels will be controlled by a thermocouple on the inside surface of one window of each sun exposure.

Temperatures of ceiling panels will be maintained in two ways: At the outside, where the sun load is greatest, a photo-electric cell will measure sunlight intensity. Since heat and solar light curves are nearly parallel, these sunlight intensity measurements will be used to control panel temperatures. Interior-area temperatures will be regulated by thermostats connected with electrical circuits, since the electric-light load is the most important factor. However, a fixed year-'round temperature may be maintained.

• **Costs**—Estimates for conditioning the building with panel cooling were about $80,000 below those for a conventional split system with low-pressure blender units at windows. Though direct mechanical costs were $18,000 higher than for a conventional system, structural savings—elimination of a penthouse with monumental construction and heavy reworking of the walls in the main building—made possible a net saving.

Leopold believes that for a period of at least five years, or until mass production lowers cooling-panel costs and contractors become familiar with installation, mechanical costs will continue high. He places panel-cooling operating costs in the median group of air conditioning installations, fits relative space and equipment requirements into the minimum group (no space required on the outside wall, little in the ceiling). Panel cooling will be of the greatest value, he says, where added cubage for conventional air conditioning is costly (in the Time-Life Building, each square foot of floor area saved is worth $5 a year).

• **Advantages of panel cooling**—In pilot tests and in actual use, these additional advantages of panel cooling were found:

1. Temperature ranges of 6 deg in winter produce no noticeable human discomfort. With air conditioning alone, a change of 2 deg creates noticeable effects on human comfort.

2. Supply air need not be zoned. Zoning the chilled water can be done much more economically.

3. With relatively little air entering offices, no drafts are created, making lower ceilings possible.

4. The same ceiling heights and appearance are maintained in both new and old buildings.

5. Stratification problems are eliminated. Temperatures are uniform from 1 in. above the floor to 6 in. below the ceiling. Continuous air circulation is caused by the coolest air being next to the ceiling, whereas warm air tends to rise.

Anglin-Norcross (Ontario) Ltd., are the general contractors for the project. Canadian Comstock Co., Leaside, Ont., are the mechanical and electrical subcontractors. Marani & Morris, of Toronto, Ont., are the architects.

Court battle flares over engineering

DALLAS, TEXAS—Dallas County Road District No. 1, an agency created by Dallas County to get around bond issue limitations, covers practically all of Dallas County except land between the Trinity River levees. The district is administered by the County Commissioners Court, governing body of the county.

In 1949, voters in the district approved a $22.5 million road and bridge building program. After the election, the Commissioners Court hired Koch & Fowler, a private engineering firm, do all the engineering work needed to carry out the program. Under the contract, Koch & Fowler was to receive a percentage of the contract amounting to about $1 million.

Several months ago, a group of nineteen taxpayers brought an injunction suit contending that the Koch & Fowler contract was illegal. Among the reasons they cited were these: the contract to a private engineering firm usurps the powers of the Dallas County engineer; the contract was not mentioned in the bond election order.

The suit was complicated by the question of the constitutionality of the Dallas County Road law which gives sweeping powers to the county engineer. Julien C. Hyer, assistant district attorney of Dallas County, once held that the entire road law was unconstitutional. He was overruled by Texas Attorney General Price Daniel.

• **Faces questions**—Thus, when the case reached District Judge MacTaylor in Dallas on Dec. 17, the judge was faced by these questions:

1. Does the lawsuit apply to the county road law since Road District No. 1 is different from the county itself?

2. If the lawsuit applies to the county road law, must the judge decide on the constitutionality of the entire law or just that part applying to the county engineer?

3. Finally, if the road law is constitutional insofar as it affects the county engineer, does it forbid the hiring of outside engineers such as Koch & Fowler?

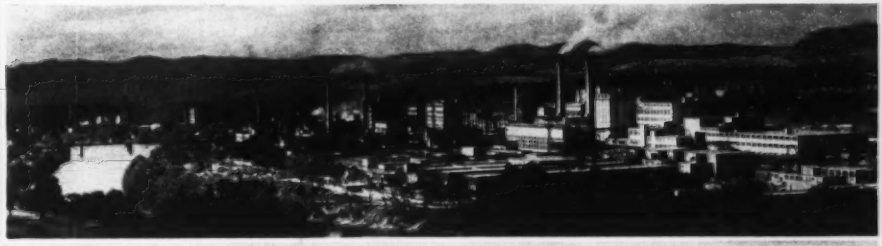
Three days later Judge Taylor denied an injunction against the Koch & Fowler contract and asserted that the section of the Dallas County Road Law governing the county engineer was constitutional. He refused to decide other issues of the law.

• **Cites powers**—Judge Taylor ruled that the Commissioners Court has powers in road and bridge building other than the powers given in the road law. Hence, the Commissioners Court has the power to create a road district, to issue bonds for this district and hire a private engineering firm to handle the district (as opposed to the county) building program. The judge decided the Commissioners Court actions did not create an office for Koch & Fowler, but merely "an employment."

Plaintiffs immediately gave notice of intention to appeal the case to the Texas Court of Civil Appeals. The Commissioners Court, through the district attorney, might also file an appeal in an effort to get the question of the constitutionality of the road law settled for once and for all. That's where the case stands now.

At Tennessee Eastman Company

DIVISION OF EASTMAN KODAK COMPANY



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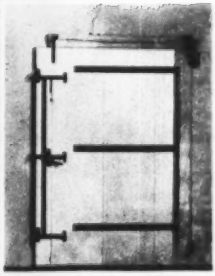

Single-swing Fyrgard Door

Twice thicker steel side sheets mean real fire door protection

You will find many Richmond Door installations in this great, modern plant which is a large producer of cellulose ester plastics, acetate yarn and staple, and industrial chemicals. As the plant has continued to expand, Tennessee Eastman has continued to order Richmond Fyrgard Doors and Richmond Kalamein Doors. For years, Richmond products have been giving satisfactory service at Tennessee Eastman.

And so it is all over the country in plants that know and value the surer fire protection and better architectural design of Richmond Doors.

There are time-tested Richmond Doors for many industrial and commercial purposes — single- and double-swing or single- and double-slide Automatic Fire Doors — Kalamein Doors — Industrial Steel Doors. Also Unit Steel Frames.

If you are planning to use fire doors on any project, be sure to write for Service Sheet R5.

RICHMOND Fyrgard door

THE RICHMOND FIREPROOF DOOR COMPANY
RICHMOND, INDIANA
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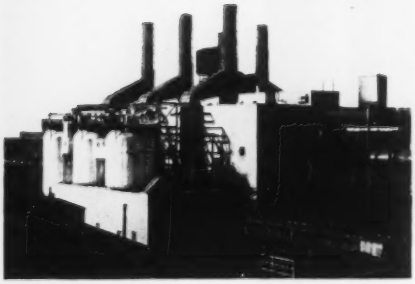
"it's **PEELLE-RICHMOND** *engineered"*

SEE OUR CATALOG IN SWEET'S

AUTOMATIC FIRE DOORS • KALAMEIN DOORS • INDUSTRIAL STEEL DOORS • UNIT STEEL FRAMES

Steam Station at Moss Landing, California, designed and being constructed for Pacific Gas and Electric Company.

WHEN INDUSTRY NEEDS POWER



Central Boiler House and Water Treating Plant for National Tube Division, United States Steel Company

The experience of Stone & Webster Engineering Corporation is available to utilities or industries requiring facilities for steam or electric generation. The work of the Corporation in the steam power station field aggregates in excess of 8,800,000 kw in capacity, equivalent to about 16% of the utility steam generating capacity in the United States.

STONE & WEBSTER ENGINEERING CORPORATION

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HOW TO HELP BRITAIN ...and Ourselves

The purpose of this editorial is to help Winston Churchill obtain the aid Britain needs

(1) to weather her present financial crisis, and

(2) to avoid a chronic recurrence of such crises.

This is not a philanthropic purpose.

Britain is our staunchest ally in the free world's continuing fight for survival. She cannot perform her role effectively if she is broke, or if she careens from one financial crisis to another.

Then, too, a nation such as ours—committed to private enterprise as a way of economic life—has a special interest in helping Winston Churchill to help Britain. His administration is relatively friendly toward private enterprise. Should he fail, he would be replaced promptly by a Socialist government more hostile than ever. And that would weaken the standing of private enterprise in the free world.

Cause of the Crisis

It is the drive of the Western World under our leadership to rearm against Russian aggression that has precipitated Britain's financial crisis. It set off a scramble for raw materials from which armaments could be made, and for many other materials that might be short in the event of war. So the prices of the things that Britain must import—mostly raw materials—have been boosted more than the prices of things she can export—mostly finished products. That leaves Britain short of funds to pay for essential imports. This difficulty increases as the necessity becomes more urgent to divert industrial effort from production for export to production for security.

The Basic Trouble

Although Britain's immediate crisis was touched off by the rearmament drive of the Western World, her basic affliction is one from which she has suffered since the end of World War II. Stated in its simplest terms, Britain does not produce enough goods to pay her own way as one of the family of free nations.

For years this deficiency in home production was made up by income from shipping and overseas investment. But Britain had to sell a large part of her foreign investments to finance her heroic part in World War II. So her income from that source has been greatly reduced. And, in spite of an increase of about a third above prewar in her own production of goods and—thanks to a continued "austerity" program—a much larger increase in her exports, Britain still is not paying her own way.

Two Ways to Solvency

Britain has two ways to restore her solvency. One is to cut down on what is consumed—the belt-tightening process. The other is to step up British production.

To surmount the present crisis, Mr. Churchill has asked for some cutting down. He probably must ask for more.

Except as a stop-gap expedient, however, more cutting down of Britain's consumption is clearly a dangerous course. That would further depress a British standard of living which, not more than half as high as ours, already is too low. Politically such a course would grease the skids for Winston Churchill's administration, even now governing by a wafer-thin parliamentary margin. Also, as *The* (London) *Economist* remarks, the "lazy expedient of cutting trade" would result in "hurting other people and forcing them to take similar action"—by cutting the market for their products.

The Only Cure

The best and, in fact, the only way to help cure Britain's economic ills is to help Britain produce more. Here the technical possibilities are encouraging. On the average, the British industrial worker produces only about 40 percent as much a year as the American worker. That is a British estimate, made by Sir Ewart Smith.

Wider use of better industrial methods and modern tools and an infusion of the competitive incentive into British industry — to replace the cartel and other restrictive practices — would go a long way to narrow this wide gap in worker productivity. This is the consensus of experts on both sides of the Atlantic.

Since 1948 the Anglo-American Council on Productivity has done much to encourage output per man-hour in Britain and to foster this doctrine with both labor and management. But much yet remains to be done.

In the United States it is increasingly suggested that before we give Britain any more economic aid we should insist that everything possible be done to exploit the technical possibilities of increased production. This emphasis on production is needed. But if we Americans were to impose upon the hard-pressed British people conditions that could be construed as an affront to a friendly and sovereign nation, we might well put into the hands of a masterful rabble-rouser such as Aneurin Bevan, the anti-American leader of the Labor Party's left wing, a campaign issue on which to maneuver himself into the Prime Ministership.

Churchill Can Insist

But Winston Churchill is not so handicapped as we should be in imposing prerequisites of further aid. As Britain's own, most honored leader he will raise no touchy questions as to Anglo-American relations if he insists that Britain have firm plans to cure her economic ills, plans sharply focussed on ways and means of increasing Britain's industrial efficiency.

By presenting a convincing plan to cure Britain's recurring crises through greater production, Mr. Churchill will greatly facilitate the process of getting the aid his country must have. He will also remove an increasingly dangerous element of dissension in Anglo-American relations – the feeling of many Americans that more aid to Britain is more money down the drain. The way to counter that feeling is to come up with a prescription for an economic cure, not a request for another economic poultice.

Technically, such a program is entirely feasible. It will perhaps be the supreme test of Winston Churchill's statesmanship to make it politically feasible as well.

In the interest of Britain, of the United States and of the whole free world, we wish him all success.

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NOT FOR THE SHELF...

This Construction Machinery Lubrication Book

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Look up Crawlers, or Calcium Greases, or Diesels or whatnot concerning Earth Moving and Construction Equipment. You'll find your subject covered authoritatively and understandably, from mechanical principles to technicalities. You'll realize that your up-to-the-minute Cities Service book of 56 pages, with sharp drawings and photos, has been developed to broaden your own fundamentals of lubrication *whys, hows and whats.*

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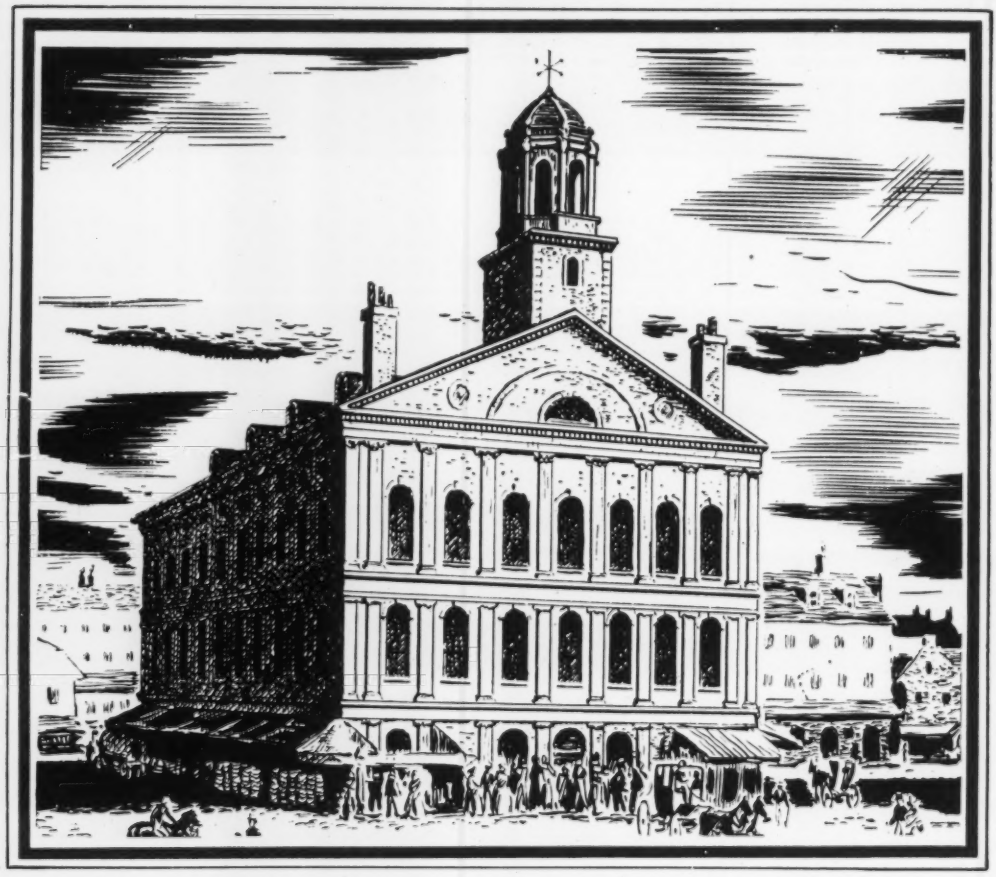
CITIES SERVICE



Boston's Faneuil Hall, popularly called "The Cradle of Liberty", as it looked 100 years ago.

Boston, Massachusetts, has cast iron water and gas mains in service that were installed more than a century ago. In those days, modern pavements were unknown; labor costs were low. Today, the expense of unnecessarily frequent repairs to underground mains, or untimely replacements, and consequent restoration of costly pavements, is a risk you cannot afford to gamble with. Cast iron pipe has an established record of long life and low maintenance. It effectively resists corrosion and possesses the four strength factors so necessary to meet the stresses imposed by modern traffic and crowded underground construction. These are shock, crushing, bursting and beam strengths. No pipe deficient in any of these strength factors should ever be laid in paved streets of cities, towns and villages. **United States Pipe and Foundry Co., General Offices, Burlington, N. J. Plants and Sales Offices Throughout the U. S. A.**

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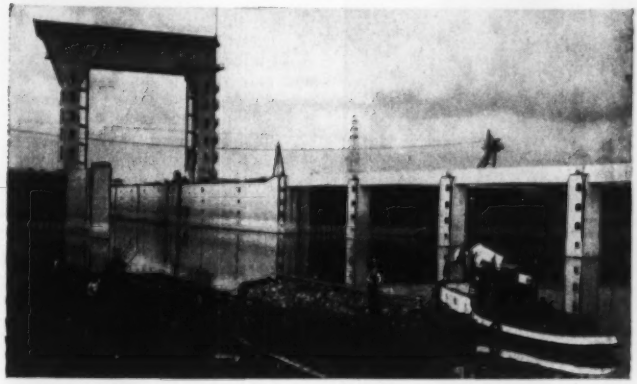
NUMBER ONE OF A SERIES



LARGE LOCK—This inland lock at Tiel, The Netherlands, is said to be the largest of its kind in the world.

New canal to connect Rhine with sea

A new Amsterdam-Rhine canal will be officially opened May 23, 1952, to give Europe's most important river a new outlet to the North Sea.

The new canal, following in part the route of an older connection, will provide a much wider and deeper waterway, and will include what is claimed to be the largest inland lock in the world.

• **History**—There has been an Amsterdam-Rhine Canal (Merwede Canal) since 1893, but this waterway between Amsterdam and Gorinchem on the Waal River has long been considered inadequate. The winding course of the canal and its limited width and depth limited the amount of traffic it could carry. Originally, this older canal was designed for vessels up to 1200 tons dead-weight. The limited facilities sometimes make it necessary for ships to wait three days before they go through the locks. Other handicaps include the numerous low drawbridges.

• **Remedy**—Dutch engineers started on plans for the new waterway more than 20 years ago. An act of March 27, 1931, provided for the construction of a new water route from Am-

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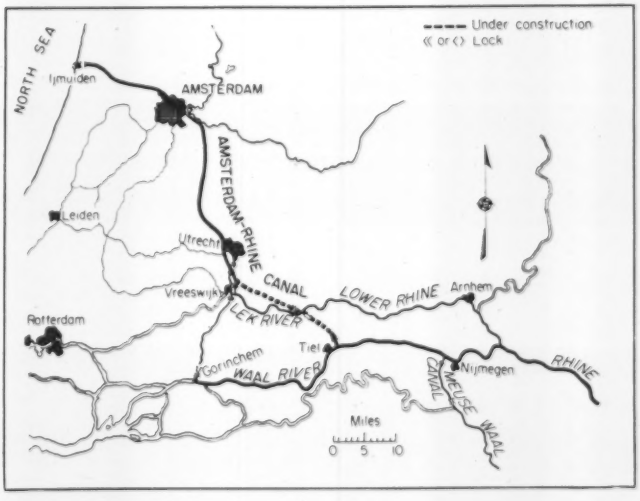

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Rud-O-Matic Taglines are made in 8 models for all bucket sizes, and are supplied with cable and installation equipment. *Immediate delivery from your nearby equipment dealer — or send coupon below for details.*

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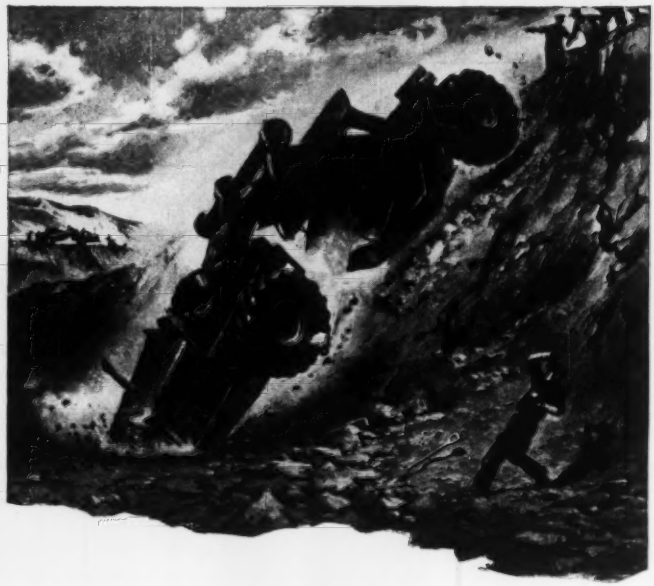

A nose dive

that might have left us up in the air...

(based on actual Hartford Loss, File #H-20072)

It was a steep incline—about 30 degrees. Almost up, my motor stalled and I suddenly lost my air. With no brakes, no gears, me and that earth-mover back-tracked fast. I hit a bump and went flying. The rig "sashayed" completely around, and started high tailing downhill, headfirst. But the bucket caught. This drove the machine's nose deep into the dirt. And caused enough damage to leave the boss up in the air for $1461.39 . . . except that he had a *Hartford Contractors' Equipment Policy* that got things fixed up quick with no trouble or expense to him

Who'd have paid this $1461.39 repair bill if this had been your machine?

Not you! *Not* if you had Hartford Contractors' Equipment Insurance. And your Hartford agent working with the company to see to it that your claim is paid promptly and fairly!

Your equipment investment is a big one. Get your Hartford agent or insurance broker to protect it for you . . . properly. In more than 5000 communities, you can locate your Hartford Fire Insurance Agent by calling Western Union by number and asking "Operator 25."

Year in and year out you'll do well with the

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International . . .

sterdam to the upper Rhine, as well as a side branch of this waterway through the Lek River near the town of Vreeswyk. •

All bridges crossing the new waterway have been rebuilt so that they are high enough to allow most vessels to pass without necessitating opening the draw span.

Vessels of the largest type now navigating on the Rhine (up to 4,300 tons) will be able to navigate the canal. The new waterway has a bottom width of 50 meters and a depth of 4.20 meters.

Completion of the waterway will cut the distance between Amsterdam and Germany by nearly 25 miles, and the time by 20 hours.

• **Biggest lock**—The main canal lock at Tiel will have a lock chamber 350 meters long, with a width of 18 meters.

The lock will be divided into three compartments of 90, 170 and 90 meters each, the outer chamber to be equipped with vertical lift gates and the other two with mitre gates all electrically powered.

The sectional construction of the lock will make it possible to use the structure according to the need, so that whole trains of barges can be locked through as units if necessary. Mooring areas on either side of the lock, will have a length of about 500 meters.

The miter gates weigh more than 65 tons each, the vertical lift gate 190 tons. The lock structure itself will rest on 6,466 piles. More than 77,000 cubic meters of concrete was used.

Another Rhine Canal is proposed

There are detailed plans for the building and financing of a canal to join the Rhine, Main and Danube rivers and thus create a direct link between Austria and the North Sea.

Such an inland water system would result in closer contact between southeastern and central Europe. Thus Vienna might regain some of its former importance as the trade center of the Danube region.

Before the second World War Austria's total annual goods traffic on the Danube amounted to some 3.5 million metric tons, 1.3 million metric tons being exports and imports, the rest transit traffic. Whereas the total trans-shipment at the Linz River port was 76,000 metric tons in 1947, it rose to 800,000 tons in 1949, and to

(Continued on page 54)

LOADS OVER 1,600,000 TONS . . .

8 Years Work in 3

From August 1948 to June 1951, this 3/4-yard Lorain TL25 shovel has worked *continuously* for 16,000 grueling hours loading lead mill tailings . . . 24-hours-per-day . . . 7 days per-week. That's equal to almost 8 years of ordinary 40-hour-per-week service. Average output was 2400 to 3000 tons of material every 24-hours . . . somewhere between 1,600,000 and 2,000,000 total tons. This performance record explains why 2 more Lorain TL-25's have joined this "young veteran" which is still in service! With a Lorain "TL" on the job, you, too, can get record-breaking performance!

REASONS FOR RECORD-BREAKING "TL-25" PERFORMANCE

Check amazing Lorain "TL-25" performance with your Thew-Lorain Distributor . . . ask about these exclusive design advantages . . . √ "Packaged" Components — engine, clutch shaft, etc. — may be removed and replaced as complete units √ 5 identical, interchangeable clutches √ One-piece, all-welded turntable bed √ Anti-friction bearings √ Complete package design — no extras to buy √ 3 sizes of 2 speed crawlers √ 4 rubber-tire mountings √ 5 interchangeable front ends √ Get *all* the facts on the Lorain TL 25 from your nearby Thew-Lorain Distributor.

THE THEW SHOVEL CO., LORAIN, OHIO

LORAINS NO. 2 & 3 were purchased by this owner based on the steady 24-hour performance record of their first Lorain TL-25.

THEW LORAIN

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before your plans are drawn on engineered construction jobs

• EVEN BEFORE the plans are drawn . . . *before* the blueprints are made on your next engineered construction job, call in Blaw-Knox engineers for the expert consultation service that assures lower concrete placing costs.

Blaw-Knox engineers are backed by over 40 years experience in solving tough or unusual concreting problems. They are trained to get to the core of your problem and find the simplest, least costly method of solving it. They can suggest operating procedures to speed the job, or cut down the necessary number of operations. They will recommend the most efficient forms for the job and help you estimate your bids.

Whatever your concreting problems—dams, tunnels, bridges, even small sewers—take advantage of the Blaw-Knox engineering service *before* you start to plan. Write, wire or phone for information.

Preliminary planning plus BLAW-KNOX STEEL FORMS saved one costly concreting operation

• This big tunnel job is a typical example of how early consultation pays off. Blaw-Knox engineers showed the contractor how to combine the collapsible Steel Forms to permit concreting of side walls and roof arch in one operation. One step in construction was saved, and the necessity of using an expensive copper water stop was eliminated.

STEEL FORMS

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Get complete details about Blaw-Knox Steel Forms and the consultation service that is available to any contractor without obligation.

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1.37 million metric tons in 1950.

Once the Rhine-Main-Danube Canal is completed, river traffic will become a convenient and cheaper way of transportation leading from Rotterdam to the Danube River's mouth at Sullina on the Black Sea.

Record construction in Canada in 1951

Another record year for construction in Canada was achieved in 1951. Preliminary figures of construction during the last year have just been released by James A. Daly of Engineering and Contract Record of Toronto. They show that total construction exceeded two billion dollars, present estimates suggesting a total of about $2,300,000,000.

This exceeds the previous year's record construction total by fifty per cent. It represents an increase of twice the actual volume of construction carried out in the boom year of 1929, allowing for the change in the value of the dollar, and an increase of nine times in the volume of work over 1933, the poorest recent year for building.

House building alone did not reflect the buoyant tone of the construction market in Canada, the proportion of house construction to total construction dropping off appreciably in 1951 due to the credit restrictions imposed by Ottawa as an anti-inflationary measure. The percentage dropped from about 35 to 19. Engineering construction accounted for more than one third of the 1951 total.

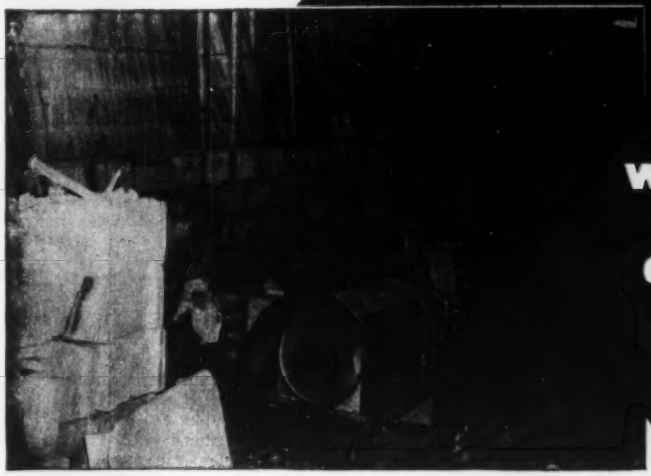
• **More power development**—Calgary Power Ltd plans on spending $50 million in Alberta for power development—new plants, lines and equipment—in the next five years to keep pace with the growing demand for electric energy, rural electrification and industrial and domestic customers.

During the last three years the company spent $25 million and managed just to keep abreast of the growing demand for electrical power.

• **Wood pulp development**—The Celgan Development Co. will embark soon on a $65 million wood pulp and newsprint development in the Arrow Lakes region of British Columbia. The project calls for the construction of several mills 250 mi east of Vancouver in the Kootenay area.

This is the third phase of a development program launched by this company. Other plants by subsidiaries are at Prince Rupert, B. C., and Edmonton, Alta., involving expenditures of $90 million.

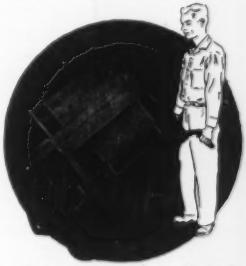
outside- a frigid 28° below



WORK GOES ON IN A COMFORTABLE 65° ABOVE!

Thanks to Silent Glow Portable Heaters, work on this housing project in St. Paul was completed on schedule last winter in spite of sub-zero temperatures.

This winter, the scene will be repeated on construction jobs from coast to coast where Silent Glow units will be effectively used to dry plaster, keep concrete from freezing, thaw frozen machinery, and to provide more comfortable working conditions.



Model RF Silent Glow Portable Heater provides two kinds of heat ...radiant...forced air by means of auxiliary fan. Delivers 168,000 BTU per hour. Other Silent Glow models deliver up to 350,000 BTU per hour.

Easy to use... just wheel unit where heat is needed... then flick the switch... in a matter of minutes, unit will deliver 168,000 BTU per hour. *Safe*... all moving parts and heated surfaces fully protected... fire goes out immediately when switch is snapped off or power is shut off. *Clean*... burns without soot or fumes... no carbon monoxide or unburned hydrocarbons. *Economical*... low original cost... operates on low cost No. 2 fuel oil.

Avoid weather layoffs... send coupon today for complete information.

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THE SILENT GLOW OIL BURNER CORP., 850 Windsor St., Hartford, Conn.
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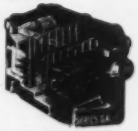

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How Detroit fought record snowfall

Record-size snow falls produced the same problems for Detroit, Mich., that bothered other Mid-western cities over the year-end. But the automobile city moved in a novel way to handle the problem of cars stalled in snowdrifts along important through streets, where they were creating traffic bottlenecks.

The city hired 49 tow trucks from private garages to go into service with seven city-owned trucks. These preceded snowplows working on clogged thoroughfares, and towed stalled cars to cleared areas.

A policeman accompanied each tow truck, making note of the license number of the towed car and of the location where it was placed. Although police ticketed about 5,000 cars for overtime or no-standing violations, no towing or impounding charge was made. Officials thought such action unjustified because motorists had insufficient warning of the blizzard.

The expense of hauling away stalled cars was estimated at about $12,000 a day. About three days' work was necessary to clear the streets. The record 32 in of snow which fell during the holiday weekend made snow removal expense of about $50,000 daily. The total bill was about $700,000.

The Department of Public Works, finding its normal, 700-man force entirely inadequate, added 1,500 workers. These men were organized into shovel teams which attempted to keep the Loop area clean, and also to open as many of the city's 120,000 catch-basins as possible.

Some 200 open trucks were recruited from the Sanitation Division to cart off snow to be dumped into the river or into storm sewers. Ten graders with snowplow attachments, 60 trucks mounting plows, 10 tractors with front-loaders, and five mechanical-belt loaders swept through the streets, followed by 60 trucks from which salt was spread.

NEW SNOW CLEARANCE PLAN—Columbus, Ohio, took advantage of past mistakes when it found traffic demoralized by this season's first heavy snowfall. Snowplows threw the snow into windrows in the middle of the street. The banked snow will remain there to act as a divider for traffic until the snow has melted or workmen are able to remove it in trucks. The city was gripped by snows, snowplows tossed the snow against curbs, banking it five feet high in places, thus marooning thousands of autos parked along the curbs.

Tanks aid water system at half cost of added pumps

Atlanta, Ga., is economically trimming off its peak pump and filter rates, smoothing out the high spots in the daily load curve of its water supply system. How? By adding tank storage to the distribution system.

Addition of just one of five proposed tanks has chopped the peak pumping rate of 105 mgd back to near 85 mgd. The system will benefit by the other four elevated storage reservoirs just as soon as materials for their installation can be had.

At low capital outlay the city is building more capacity into its existing pumping and treating facilities by enabling them to produce reserve through the off-peak hours.

A corollary benefit is reduction in required pumping pressure from 120 psi to about 115 psi. And that's just with the one elevated tank installed; a further drop in pumping pressure will follow addition of the others, with resultant saving in fuel costs estimated at 10 percent, or $25,000 per year.

Pressure in lines of the tank-served area formerly varied from 50 down to 25 psi. Since the tank went on the line, variation has been but 10 psi, to a low of 40 psi. Improvement to service of about 15 psi in steady pressure is indicated.

• Cost in $4,000,000—Cost of the program is estimated at about $4,000,000—one half for the five 2-mg tank installations and the remainder for reinforcing the distribution system within the tank areas. It was estimated that equal bolstering of the system by addition of pump and filter capacity would have meant an initial cost nearer $8,000,000. And additional boilers, pumps and filters would have

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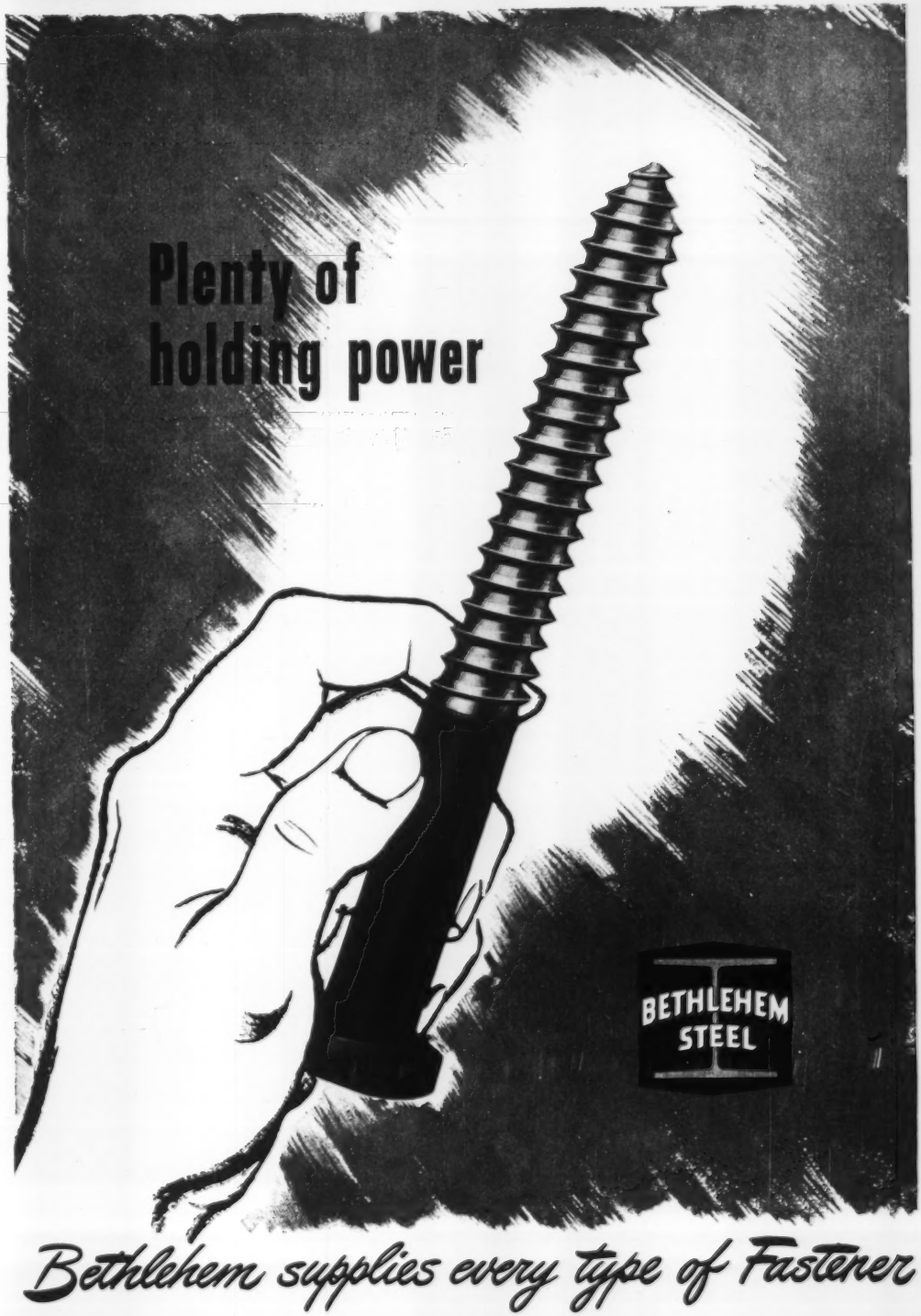


Bethlehem supplies every type of Fastener

there is an easier way!

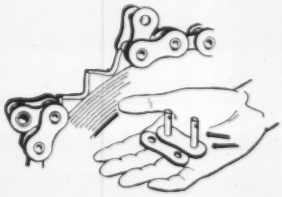
Did you know the job of assembly, disassembly or repair of the roller chain drives on your heavy equipment can actually be *easy*. It can . . . if your machines are equipped with Baldwin-Rex® *"BA" Assembly* Roller Chain. With "BA"* you get all the advantages of *riveted* roller chain . . . high strength, long life, low cost . . . plus even *easier* assembly, disassembly and repair than with standard cottered chain.

Look at the illustrations

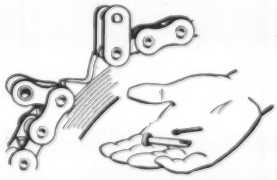
. . . there's no doubt about it . . . the "BA" way is the easy way . . . the time-saving way . . . the money-saving way

"BA" means Baldwin Assembly

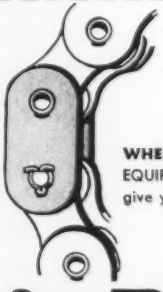
With standard roller chain, in order to take the chain apart in the field, you must drive out the entire pin link with hammer and punch. There is always the danger of damage to chain parts as the entire pin link is driven out. Assembly presents additional problems. The two pins must be driven back into the chain while one or more side plates (depending on the number of strands) are held in position. You almost need 3 hands to do the job.



With Baldwin-Rex "BA" Assembly, it's an entirely different story. All you have to do is remove the cotter and drive out the *single pin* of the special "BA" connector link. The other pin stays firmly riveted in place. No danger of damaging parts. Chain is cut by removing only 2 parts . . . the cotter and the single pin connector. To put the chain together, just put the side plates and roller links in place on the sprocket, insert the single pin connector pin and secure with the cotter. That's all there is to it!



For all the facts on "BA," send for our Bulletin 50-6. Chain Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis.



WHERE YOU SEE *THIS*, you see QUALITY EQUIPMENT with component parts selected to give you most for your money.

BALDWIN-REX ROLLER CHAINS

A PRODUCT OF **Chain Belt** COMPANY OF MILWAUKEE

Atlanta • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • El Paso • Houston • Indianapolis Jacksonville • Kansas City • Los Angeles • Louisville • Midland, Texas • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh Portland, Oregon • Springfield, Mass. • St. Louis • Salt Lake City • San Francisco • Seattle • Tulsa • Worcester

boosted daily operating expense, whereas storage tanks cost relatively little to maintain.

Population and industrial growth had pushed Atlanta toward doing something to build up its water system. The system had already grown up to represent an investment of $80 per citizen, so further capacity was sought at lowest capital outlay.

Paul Weir, general manager of Atlanta's waterworks, headed a survey of the situation, noting the variation in night-to-day pumping rates: 30 to 105 mgd. It was decided to let added storage, rather than added pump capacity, handle new peak loads that were expected.

Here is how the plan is working out:

• **Five storage tanks**—The five steel storage tanks will be spotted on the city's perimeter, all feeding into the entire distribution system. They will be four to six miles out from the city's hub, serving immediate area demands but also available for drawn-down by the system as a whole.

The first tank went into operation Aug. 6, located in the southwest section, in the 4-mi zone. Those to follow, as needs demand and materials become available, are shown on the map below.

Atlanta gets its water from an intake in the Chattahoochee River, 8 miles northwest of town. From a 130-mgd pumping station at the source, water reaches Hemphill Pumping Station and Filtration plant. The entire 900-mi distribution system is pressurized by Hemphill pumps; it is these pumps that will burn less fuel as they get to even out their efforts over the 24-hour day.

In the existing system there were

(*Continued on page 61*)

SURROUNDING ATLANTA—Locations of elevated storage tanks are shown numbered in proposed order of their addition to the system.

It's easy dozing with Baker, Allis-Chalmers matched equipment—either for dozing, gradebuilding or ripping roots and rocks.

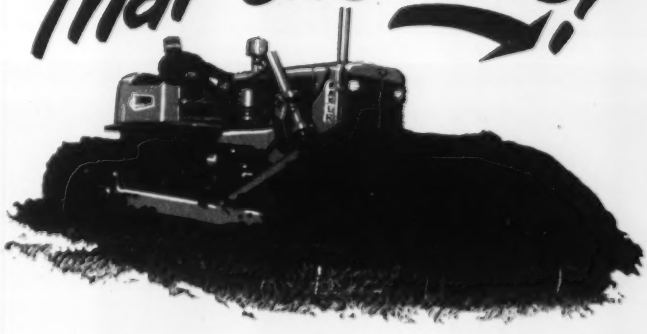
The "move-more-dirt" curve of Baker's famous involute blades, added to the design feature which puts the tractor weight on the cutting edge, leaves maximum power for push. These Baker features help make the Baker, A-C team the most maneuverable—the most easily operated, and thus by far the most *productive* of all earth moving equipment.

Don't settle for anything less than Baker, A-C! See your Baker, A-C dealer. Get on the bandwagon and see for yourself—

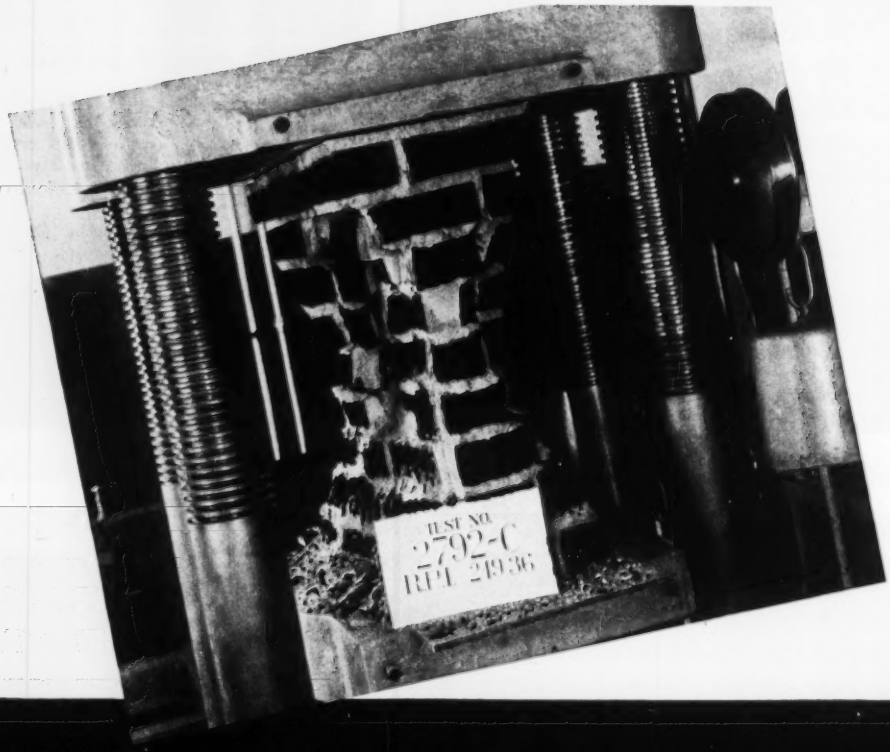
THE BAKER MANUFACTURING CO.
Springfield, Illinois

Wherever you see the Baker, A-C team at work, you see action like that pictured above, in photos of a conservation job near Lanark, Illinois. It's an Allis-Chalmers HD-9 with Baker Bulldozer.

Thar she rolls!



P. S. Have you seen the new 9-X no push beam dozer?



BRIXMENT

assures

BRIXMENT exceeds the strength requirements for masonry cement (both Type I and II) of the American Society for Testing Materials' Specification C91-49 and the Federal Specification SS-C-181b. Type II is usually specified when high strength is required.

When Brixment mortar is tested in compression between two brick, at 28 days or later periods, the brick usually crack before the mortar fails.

The strength of piers laid with Brixment mortar approaches the strength of piers laid with straight portland cement mortar.

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

Municipal . . .

already two storage reservoirs—a 500,000-gal standpipe 12 mi out on the north side of the city and a surface to in the 8-mi one serving the fast-growing municipal airport district. The standpipe is, and will be the sole pressurized tank on the system. All the new tanks will float on the line.

In operation, the new tanks will be filled by normal line pressure between midnight and 8 am daily. The one installed so far follows this schedule fairly well: it starts filling around 9 pm, is full by 6 am and empties by noon.

Chicago Bridge & Iron Co. fabricated and erected the tank. Its steel container is 105 ft in diameter and 40 ft high, mounted on an 80-ft-high tubular steel structure on a reinforced concrete spread footing.

Wiedeman & Singleton, Atlanta, were consulting engineers.

Tampa to replace slums with 500 apartments

The "Scrub", one of the most blighted areas in Tampa, Fla., is to be cleaned up and replaced with $5,600,000 worth of low-rent housing for Negroes.

Thomas A. Dyer, director, of the Tampa Housing Authority, says that 23½ acres of shacks will be torn down to make way for 500 concrete block apartments renting for between $11 and $36 per month, with utilities included.

A surrounding area will be developed by private enterprise under the slum clearance provisions of the 1949 housing Act.

Each unit of the housing authority project will have a solar heating system, an electric range, an electric refrigerator, and a fuel oil space heater.

Tenants will have available a playground of one-and-a-half acres in the center of the development.

Arterial plan for Elmira presented by N. Y. State

A master plan for development of a 19-mile arterial route system for Elmira, N. Y., and its environs has been presented by the state to city and Chemung County officials. The eight miles of the routes within the city are estimated to cost $4,642,000 and the 11 miles of highway connections outside the city are estimated at $4,986,000.

The State Department of Public Works has already presented similar arterial plans to several other cities in the state, including Albany, New Rochelle, White Plains, and Lockport.

can old age "cripple" your important drawings?

Not if you put them on Arkwright Tracing Cloth. Arkwright Cloth is the best insurance you can get that your drawings will never become brittle or opaque with age — never get paper-frayed around the edges to spoil your work.

Arkwright's extra quality shows right from the start. You can re-ink clean, razor-sharp lines on Arkwright Tracing Cloth over the heaviest erasures without feathering or "blobbing". And you can get clean, clear blueprints — if you need to — for years and years to come.

All good reasons for you to remember: if a drawing is worth saving, put it on Arkwright Tracing Cloth. Write for samples now to Arkwright Finishing Co., Industrial Trust Bldg., Providence, R. I.

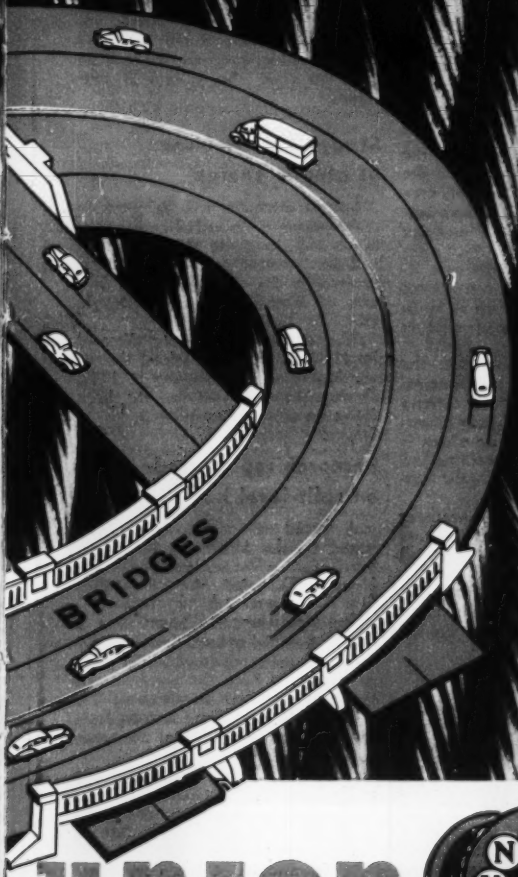
ARKWRIGHT
Tracing Cloths
AMERICA'S STANDARD FOR OVER 30 YEARS

HIGHWAYS
UNDER-PASS
OVER-PASS

GOOD ROADS ARE CHEAP!

Figured on a per year instead of a per mile basis, good roads will cost nothing because they will pay off in miles, minutes and lives. Time and delay studies show that lost minutes at 1 cent per minute, per car and lost miles at 3 cents per mile, per car will more than pay the yearly cost of modern highways tailored to fit traffic flow and load. Facts from the Public Roads Administration's accurate inventory of highways and traffic indicate that— .

AMERICA CANNOT AFFORD TO WAIT UNTIL THERE ARE 100 CENTS IN THE DOLLAR NOR UNTIL THERE IS UNEMPLOYMENT TO BE RELIEVED



This is a REPRINT of one of a series of Advertisements PUBLISHED IN 1947 in the interest of Better Roads for Better Living

The road building problem is even more acute than it was then. In 1947, there were 37,327,661 motor vehicles. The highway planners were thinking in terms of highways to accommodate 46 million vehicles by 1970. Today nearly 50 million motor vehicles are jam-packing highways which become obsolete faster than new ones are built. It is a case where too *small* planning has led us into a *big* dilemma. It points up the fact again that all America should —

THINK BIG

— today about tomorrows highways, streets and bridges. *Big Plans* need to be made now. It must be made obvious to all that unless we are prepared to tackle an enormous road building job at the earliest possible moment, then our efficiency for defense and for peace will be tremendously handicapped by a road system which really is adequate only for the volume of traffic existing in the early 1930's.

An all-out total effort is needed to enlighten the public and arouse responsible officials and legislators to *think big* — apply plenty of *mind-power* if we are to lick this problem before it paralyzes our mobility of transport.

Anything that you can do, no matter how limited, contributes just that much to the total effort — and from the selfish standpoint, the welfare of your own affairs.

UNION WIRE ROPE CORPORATION
2228 Manchester Ave. Kansas City 3, Mo.

union UNION WIRE ROPE CORP. Wire Rope
union-formed is Preformed

WOOD RESISTS FIRE

if it is
Pressure-Impregnated
CZC (FR)® Wood

Send for Booklet G28 which tells how structures can be built with wood for protection against fire hazards—to offer greater safety to contents and people.

KOPPERS

KOPPERS COMPANY, INC.
Wood Preserving Division
Pittsburgh 19, Pa.

Sound powered

TELEPHONES

NO CURRENT REQUIRED

Indoor and Outdoor Models

For permanent installation on industrial projects or temporary use on construction jobs Minimum upkeep Selective or common ringing and semi-selective or common talking.

WRITE FOR CATALOG

HOSE-McCANN TELEPHONE CO., INC.
761 THIRD AVENUE
BROOKLYN 32, N. Y.

Moisture's effect on wood walls shown

A long-range investigation has been undertaken by the Housing and Home Finance Agency to evaluate the relationship of moisture to the durability of wood-frame walls.

In a test structure at Pennsylvania State College, 22 different wood-frame wall assemblies have been erected, utilizing materials and assemblies frequently used in dwelling construction. These walls are exposed to year-'round weather conditions on the exterior, and on the interior to temperature and humidity characteristic of actual conditions in dwellings in the surrounding central Pennsylvania area.

A 20-page report has been issued on these tests, but since the report covers only the first six months of operation of a long-range program, definite conclusions or recommendations for construction practice cannot yet be made. However, the researchers did spot some trends:

• **Preliminary observations**—Paint blistering and mold growth developed on some of the walls.

Moisture generated within the structure rather than exposure to the weather resulted in unsatisfactory conditions in some cases, but a vapor barrier on the warm side of the wall was an effective preventive.

Insulation appeared to act as a retardant, even though it contributed considerably to the build-up of moisture and the development of mold on the sheathing.

Accumulation of moisture in the wood siding was one of the principal factors in the blistering of exterior paint, but no evidence of such blistering was observed on siding where it was furred out from the sheathing and the air space was vented to the outside.

The moisture build-up of sheathing and siding had little or no effect on heat-conducting values of the wall panels.

Ventilation provided in both the attic and crawl space was sufficient to prevent condensation on framing members in these spaces.

Atom research produces 100 kw as byproduct

The long-range goal of producing power while converting nonfissionable material into fissionable material more rapidly than nuclear fuel is consumed is a step nearer. At the Atomic Energy Commission's testing station in Idaho, small amounts of electric power have been produced from heat energy released in the operation of an experimental breeder reactor.

In a trial run late in December, electrical power of more than 100 kw was generated and used to operate the pumps and other reactor equipment, and to provide light and electrical facilities for the building that houses it. The heat energy generated was removed from the reactor by a liquid metal at a temperature high enough to generate steam to drive a turbine.

Test operations are being resumed after further adjustments of the reactor system. It will be a few months yet before the AEC will know whether it is possible to breed fissionable material faster than it is used up. Unless breeding proves possible, atomic energy will be available only until all the fissionable material that can be extracted from the ground is consumed

Study industrial use of atomic energy

Special attention will be given to development of industrial applications of atomic energy at a new research and development department just organized by the chemical plants division of Blaw-Knox Co., Pittsburgh, Pa.

The department will be directed by H. B. Coats, who joined the research staff of the company in 1943. During the last year he has been active on atomic energy work.

Research report made on split-level houses

A special research report has been issued by the University of Illinois Small Homes Council on "Split-Level Houses Designed for Solid-Fuel Heat." It points out:

By separating the home into a ground-floor living level, a raised sleeping level, and a depressed utility level, advantages of both the one-story and the two-story house are obtained. Yet there is only a half flight of stairs from the living area to either of the other parts of the house.

The separation of levels allows the utility area to be placed in the least costly part of the house and offers economical storage of fuel. At the same time there is easy accessibility.

(*Continued on next page*)

Research . . .

Research was carried out in the university's department of architecture by Prof. A. Jones. The project was sponsored by Bituminous Coal Research, Inc., the Anthracite Institute, and the American Coke and Coal Chemicals Institute.

Bureau of Standards finds packed fibers inflammable

Recent investigations by the fire protection laboratory of the National Bureau of Standards have provided conclusive proof that close packed fibrous materials can ignite by self-heating.

NBS tests show that these materials in quantity—after standing for some time—may develop an internal temperature higher than the surrounding or ambient temperature. The extent of this temperature rise depends upon the material, its density and packing, and upon the ambient temperature and the length of time.

• **Precautions necessary**—These experiments give strong evidence that suitable precautionary procedures should be taken in the storage and use of such conditions. For instance, a 12-in. cube of wood fibreboard, kept at 146 deg F, develops a peak interior temperature of 148 deg F; a sample kept at 210 deg F develops a maximum internal temperature of 230 deg F. If the size of the specimen is increased, the amount of self-heating is also increased.

In general, the effect of self-heating is small. However, in some special cases serious consequences may result. In one case, nine carloads of insulation fibreboard were shipped from the factory in the south, bound for New York, before the heat of fabrication was completely dissipated. Seven days later, one carload was discovered to be afire. The other eight cars were unloaded into an Army warehouse after ten or twelve days on the road, and were stacked in a single pile of more than 24,000 cu ft. Four days later, the warehouse and its contents were destroyed by fire.

The investigation of the possibility of ignition due to self-heating was requested by the Corps of Engineers.

• **How to figure**—As a result of the extensive tests, which included materials such as cane fibreboards, felted cotton linters, Douglas fir, crushed coal, and alfalfa hay, certain results were obtained.

For a given material, the logarithm of the ignition temperature was found to vary inversely as the logarith of the specimen size.

The ROGERS

POWER LIFT DETACHABLE GOOSENECK TRAILER

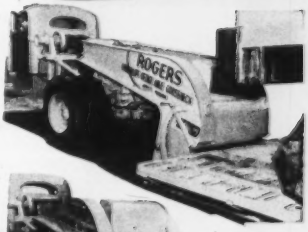
PATENTS PENDING

1 Carries heavier loads on larger tires.
2 Detaches quickly for fast, easy front loading.
3 Stoops to clear low overhead obstructions.
4 Raises its deck to clear high banked crossings.
5 Is detached, loaded and re-attached in 5 minutes.

IT'S EASY AS A B C

a Loaded trailer with deck in normal position for traveling.

b Front of trailer being lowered by cable operated ram for quick, easy front loading. Ram is powered by the customers winch.



c Front end of trailer lowered to ground. No blocking is required under frame.

d Tractor and gooseneck moved forward for quick, easy front loading.

DEVELOPED BY

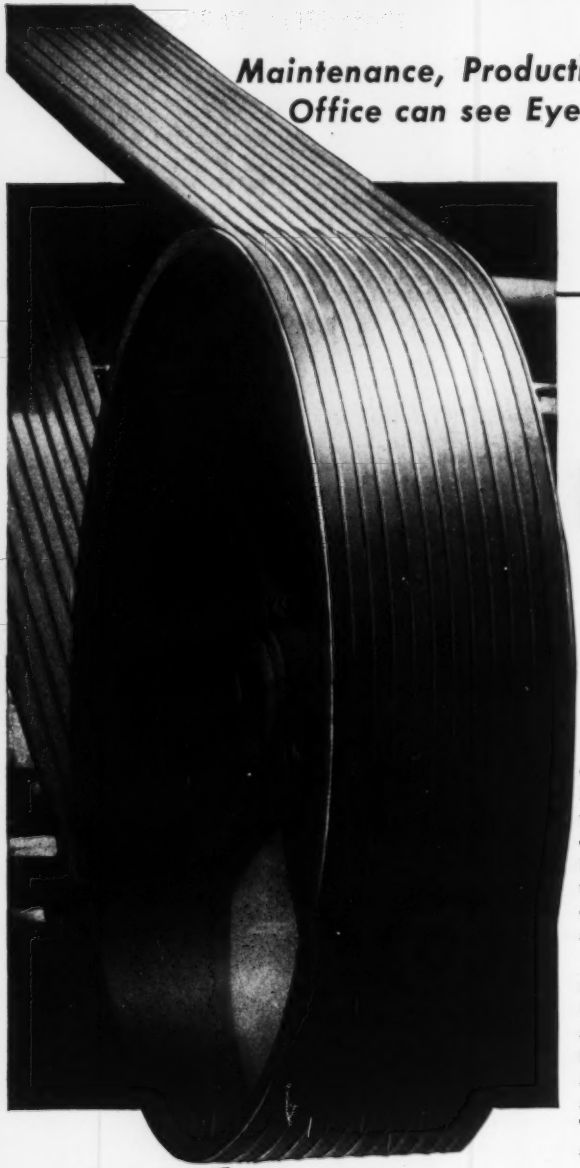
The Trailer Pioneers

ROGERS BROS. CORP. ALBION PENNA.

135 Orchard Street

Export Office: 50 Church St. New York 7, N. Y. Cable Address: "Brocltas"

Maintenance, Production, Purchasing and Front Office can see Eye to Eye on this "Baby"



It's a TOUGH, LONGER-LASTING BULL DOG V-BELT!

Yes, a Bull Dog V-Belt has something for everybody. Your engineers and production heads who have enough on their minds already with shortages and the necessity for increased output will appreciate the SPECIALLY ENGINEERED BWH CORD SECTION and its high tensile strength. They'll get the superior load carrying capacity from BULL DOGS and the ability to absorb shock loads that's needed.

Your maintenance men (engineers, too) will note the QUALITY CONTROLLED COMPOUNDS developed by BWH which run cooler and do not crack or deteriorate under severe flexing. They'll probably note also the MINIMUM STRETCH — due to a new and exclusive technique in processing Bull Dog Cords. They'll be *sure* to note the less slippage, fewer adjustments, longer belt life that results.

Your maintenance men will also okay the Bull Dog V-Belt's DURABLE COVERS. They're made of closely woven, heavy, bias-cut fabric that takes the torturous wearing action where the belt meets the sheave — seals it against the penetration of dirt, grease and moisture.

With it all adding up to less money *out* in belt repairs and replacements and more money *in* from maintained and increased production . . . don't you think Purchasing and the Front Office will be glad to go along?

BWH
DEPENDABLE RUGGEDNESS

TOUGH PROBLEMS INVITED!
Ask us or your nearest BWH distributor about your power transmission belting, conveyor belting or hose problems. We're specialists in making mechanical rubber products work *better, longer.*

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER CO.

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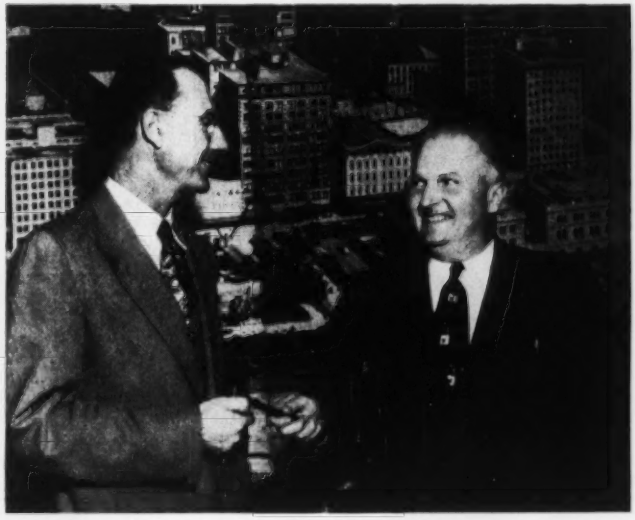
PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.



AGC OFFICERS—Seth E. Giem of Seth E. Geim & Associates, right, has been elected chairman of the advisory council of the Memphis, Tenn., chapter of Associated General Contractors, and Parker Johnston, left, of Collins Ornamental Iron Co., vice-chairman.

New appointments

Highway departments

Harold E. Carlson of Sacramento is the Kings County, Calif., road commissioner, replacing **Joseph Hunter.**

Olen Fullerton is now Arkansas state highway director, succeeding J. C. Baker, resigned.

E. L. Sandys, who has been division rural roads engineer for the Tennessee State Highway Department at Chattanooga, has been appointed assistant to the chief rural roads engineer at Nashville.

Consulting engineers

On Jan. 1, **Clifford McKibbin, Jr.,** joined Smith and Gillespie, engineers, Jacksonville, Fla.

Engineering schools

Julius A. Stratton, provost at Massachusetts Institute of Technology, and Joseph A. Snyder, treasurer, have been named vice-presidents.

George A. Kiersch, geological engineer, has joined the faculty of the University of Arizona as assistant professor of geology to teach courses in structural geology and geology applied to engineering practice. Dr. Kiersch recently resigned as supervising geologist for the International Boundary & Water Commission's "Upper Dams" investigation along the Rio Grande.

Bureau of Reclamation

Rolland F. Kaser, hydrologist with the Boulder City, Nev., office since 1946, has gone to Beirut, Lebanon, to serve a year as chief hydrologist on a 21-man mission from this country in preconstruction activities for irrigation and power on the Litani River.

I. Donald Jerman has been appointed assistant to the construction engineer for the Palisades Project in eastern Idaho.

Industrial and Commercial

Thomas E. Storey, chief engineer, Winnipeg, Man., Hydro Commission, has been named assistant general manager; D. C. Bryden chief engineer; and L. A. Bateman, assistant principal engineer.

C. W. Streit, Jr., has been elected president and general manager of the Southern Cement Co., Birmingham, Ala., succeeding George C. Walter, retiring after 50 years with the company.

Corps of Engineers

Kenneth M. Adelstein is civil engineer for the East Coast Division at Richmond, Va.

Nerd C. Scrivener is resident engineer at the New Foster Air Base, Tex.

Arthur Casagrande, professor of civil engineering at Harvard Graduate School; L. N. Harza, president of Harza Engineering Co., Chicago; H. M. Hill, Minneapolis; and W. H. McAlpine, technical assistant to the Chief of Engineers, are consultants to review the plans and designs for Tuttle Creek Dam on the Big Blue River near Manhattan, Kan.

State, City and County

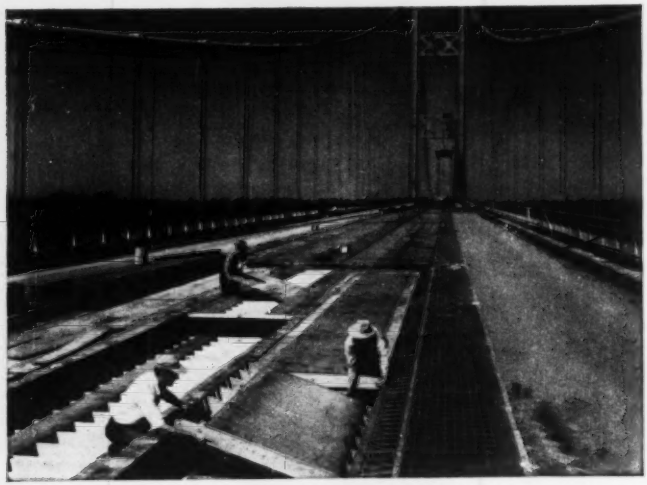
Fred H. Beckler, retired civil engineer, who served as Athens, Ohio, city engineer from 1909 to 1916, has been appointed safety-service director.

Ernest S. Rafuse of Cambridge, has been appointed chief engineer in the Massachusetts Department of Public Utilities. A member of the department for 18 years, he has been an assistant engineer.

Resignations

Arthur Reitter, city engineer at Colusa, Calif., has resigned to become general civil engineer for the Burmese government. He will work on a 2-yr technical and economic survey covering highway and railroad construction, hydroelectric facilities, geological and industrial problems.

GENERAL MANAGER AND CHIEF ENGINEER—Robert B. Diemer has been named general manager and chief engineer of the Metropolitan Water District of Southern California, succeeding Julian Hinds, retired. He is a graduate of the University of Missouri in civil engineering. He had extensive engineering experience in the Middle West, West and Mexico before joining the district in 1929. In 1941 he was made chief operation and maintenance engineer.



When Speed Counts- Specify Plywood Forms

WHEN THE JOB has to be done on the double, plywood concrete form panels* shave weeks off work schedules... cut form work application time and costs up to 25%. Plywood's every feature suits it for quick construction. It's light, tough, rigid . . . easy to work with ordinary tools. Big sheets cover large areas . . . are ideal for fabrication into cost-cutting built-up form sections. Plywood forms cut finishing time, too. Bridge, factory or apartment—plywood forms are adaptable to *every* type of concrete construction. For free catalog, write Douglas Fir Plywood Association, Tacoma 2, Washington.

Only Plywood Offers All These Advantages

- Plywood forms create smooth, flat-free surfaces
- Economical! Plywood forms can be used over and over
- Plywood forms speed work—save time and labor
- Plywood is strong, rigid—yet light easy to handle
- Plywood forms are puncture-proof, water and mortar tight
- Plywood has superior nail and tie holding properties
- Plywood is easy to work with hand or power tools
- Plywood provides sheathing and lining in one material

Douglas Fir Plywood

AMERICA'S BUSIEST BUILDING MATERIAL

*Several plywood grades are manufactured for concrete form work. Highly moisture-resistant glues in PlyForm® grade permit multiple re-use (up to 10-15 are not unusual). For greatest possible re-use, specify waterproof bond EXT-DFPA *Concrete Form* grade. For special architectural concrete, requiring finest finish, use Exterior or Interior plywood grades with "A" face veneer—or one of the new plastic-surfaced or hardboard faced plywood panels.

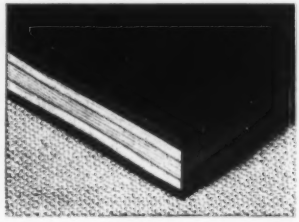
® Registered grade-trademarks of Douglas Fir Plywood Assn.

PANEL DISCUSSION

New Form Panel

A NEW PANEL material which combines smooth, wear-resistant hardboard surfaces with the strength and workability of Douglas fir plywood is now being produced by West Coast plywood makers.

Called Plyron, the new panel has been use-tested for concrete form work on several projects. One of the initial users, Contractor F. A. Canuso who is using the material in forming overpass road slabs on the New Jersey Turnpike, reports the new material "is giving us some of the smoothest concrete we have ever seen. We are getting plenty of re-uses, too."



Faced with hard, dense, long-wearing hardboard surfaces, Plyron relies on Douglas fir plywood inner construction to furnish the "muscle," making it puncture-proof, dimensionally stable and relatively light weight. The material has excellent nail holding properties and retains the easy workability of plywood. Rigid industry quality standards have been established for Plyron, similar to those for Douglas fir plywood. Details on the new product may be obtained from Douglas Fir Plywood Association, Tacoma 2, Washington.

Plywood Cuts Formwork Costs

Douglas fir plywood concrete form panels cut formwork application time and costs by over 20% in building the Kanawha Airport Terminal Building, Charleston,

"(Advertisement)"

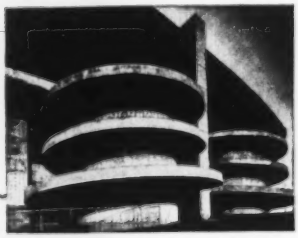
West Va., according to Charles J. Kuhn, president, Kuhn Construction Co.

"The panels speeded formwork all along the line," says Kuhn. "Panel re-use also helped lower costs." On the job, form sections were built by placing ¾"-thick Exterior Concrete Form panels across studding. Forms were held in line with double 2x4 wales, backed by double 2x6 liners, placed vertically.

Architects Tucker and Silling, Charleston, West Va., who specified plywood on the job because the panels "permit a smooth monolithic surface to be cast simultaneously with structure," report that concrete surfaces on the Terminal are uniformly smooth and even textured.

Plywood Solves Form Problems

Plywood was called on to help solve an unusually intricate concrete form job in building the spectacular twin-spiral ramps at the University of Washington Stadium addition. All concrete surfaces were curved; ramp floor slab thickness varied to provide drainage; minimum form costs were required; exposed surfaces had to be smooth, fin-free.



To create the smooth, sharply curved concrete surfaces, Strand & Son, Seattle, contractors on the job, used ¼" plywood form liner, sheathed with lumber and backed by 2x4 studs and double 2x4 wales. The 4' wide form sections were bent to the required curvature by inserting shims between studs and walers. In this way, sections were stripped, re-erected and bent to the next required radius without re-constructing the basic form structure. Architects: Geo. W. Stoddard & Associates, Seattle, Washington.

Plyform Calculator Available

A handy new slide rule calculator which gives construction data for plywood forms is available for $1.00 from Douglas Fir Plywood Association, Tacoma 2, Washington. Included with calculator is leaflet "Design Assumptions for New Keely Calculator."

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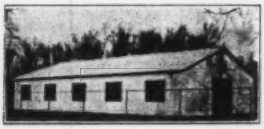

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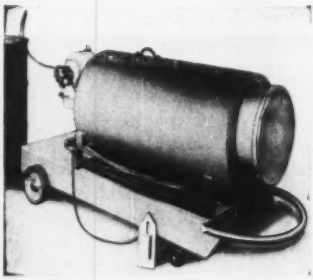

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MEETINGS

Institute on foundations

A recent institute on foundations for structures, conducted by the College of Engineering and the University Extension department of engimeeting at the University of Wisconsin, drew 81 registrants, most of the men associated with the construction industry in Wisconsin. Three days were given to discussions on soil investigation for foundations for buildings and bridges.

The discussion leaders represented university engineering and other faculties, the state highway commission, construction firms and railways, and also included Gordon A. Fletcher, who directs soil investigations for the Raymond Concrete Pile Co. of New York, N. Y., and Dr. Ralph B. Peck, research professor of soil mechanics at the University of Illinois.

Prof. Henry G. Harlow, head of the civil engineering department of Union College, has been elected president of the Mohawk-Hudson Section, American Society of Civil Engineers. He succeeds Prof. A. A. Booth of Rensselaer Polytechnic Institute. Other officers are: Vice-president, Paul Davis, superintendent Thompsen Construction Company, Albany; secretary, C. W. Davies, American Locomotive Company; treasurer, H. W. Fear, U. S. Geological Survey. Mr. Fear was re-elected. Life memberships have been bestowed on Edward W. Wendell, assistant chief engineer of the New York State Department of Public Works; Francis J. Keis, Troy consulting engineering and Hollister Johnson, U. S. Geological Survey.

David B. Johnson, head of Charles B. Johnson & Son, Inc., general contractors, has been elected president of the Builders' Association of Chicago. Other officers: E. H. Marhoefer, Jr., vice-president; Arthur H. Wells, treasurer, and H. Mayne Stanton, secretary-treasurer.

New officers of the San Francisco Section, American Society of Civil Engineers, whose election was announced Dec. 18, are: president—John S. Longwell, Piedmont, Calif., consulting engineer, and vice-president—John E. Rinne, supervisor, Civil Engineering and Architectural Division, Standard Oil Company of California. Holdover officers are: vice-president—J. G. Wright, secretary—R. D. Dewell, and treasurer—H. C. Medbery. These men plus retiring president C. T. Wiskocil form the section board of directors.

Henry W. Sweet, general manager of the Georgia Ports Authority in Savannah, has been elected president of the American Association of Port Authorities. Other officers: first vice-president, M. D. Kinsella of the Toronto Harbor Commission; second vice-president, W. D. Lamport of the Seattle, Wash. Port Commission; and third vice-president, Brig. Gen. W. F. Heavey (ret.), general manager of the Port of Houston, Tex. Paul A. Amundsen of Washington, D. C., was re-elected secretary-treasurer.

CALENDAR

Canadian Construction Association, annual meeting, Royal York Hotel, Toronto, Ont., Jan. 20-23.

National Association of Home Builders, annual convention and exposition, Conrad Hilton and Congress Hotel, Chicago, Jan. 20-24.

American Road Builders Association, Golden Anniversary, Rice Hotel, Houston, Tex., Jan. 21-24.

Wisconsin Highway Commissioners and Highway Committee Members Association, winter conference, Schroeder Hotel, Milwaukee, Jan. 22-24.

Associated Equipment Distributors, Conrad Hilton Hotel, Chicago, Jan. 27-31.

Association of Asphalt Paving Technologists, Netherland Plaza Hotel, Cincinnati, Ohio, Jan. 28-30.

American Society for Metals, William Penn Hotel, Pittsburgh, Pa., Jan. 31-Feb. 1.

California Conference on Street and Highway Problems, University of California, Los Angeles, Feb. 6-8.

National Council of Private Motor Truck Owners, convention, Hotel Statler, Washington, D. C., Feb. 7-8.

National Sand and Gravel Association, and National Ready Mixed Concrete Association, convention and exposition, Conrad Hilton Hotel, Chicago, Ill., week of Feb. 11.

Illinois annual conference on Highway Engineering, Urbana, Feb. 19-21.

N. Y. State County Highway Superintendents Association, DeWitt Clinton Hotel, Albany, Feb. 20-22.

Associated General Contractors of America, Statler Hotel, Detroit, Feb. 25-28.

Materials Handling Conference, Purdue University, LaFayette, Ind., Feb. 25-26.

American Concrete Institute, Netherland Plaza Hotel, Cincinnati, Ohio, Feb. 26-28.

American Concrete Pipe Association, annual convention, Drake Hotel, Chicago, Ill., Feb. 28-March 1.

American Society for Testing Materials, spring meeting, Hotel Statler, Cleveland, Ohio, March 3-7.

American Railway Engineering Association, Palmer House, Chicago, March 11-13.

New Jersey Sewage and Industrial Wastes Association, Traymore Hotel, Atlantic City, N. J., March 12-14.

American Power Conference, Sherman Hotel, Chicago, March 26-28.

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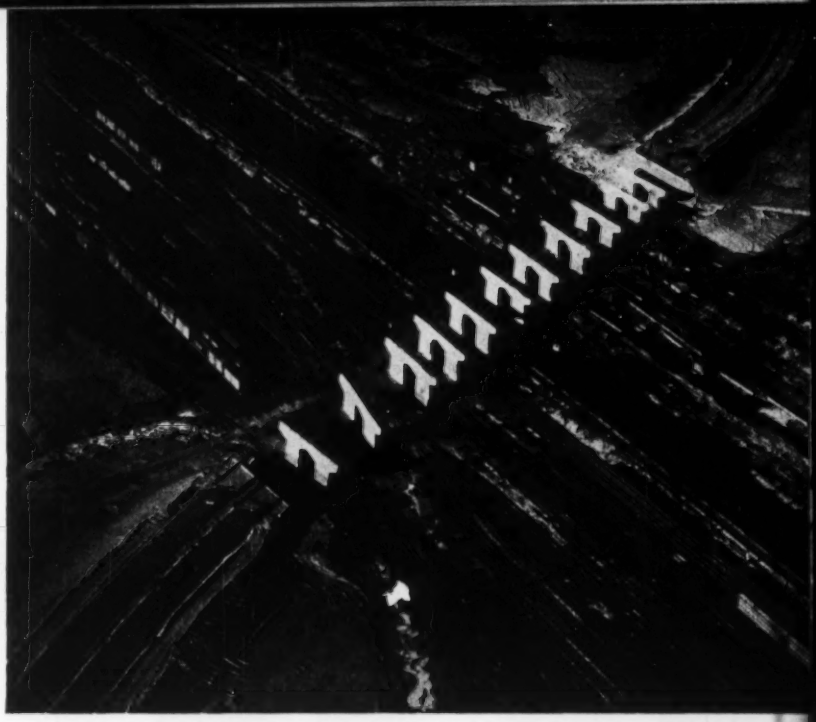

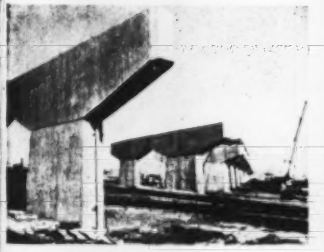

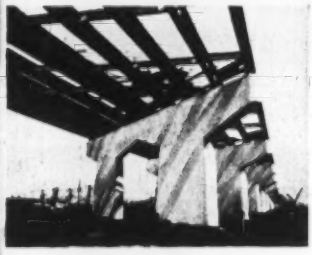

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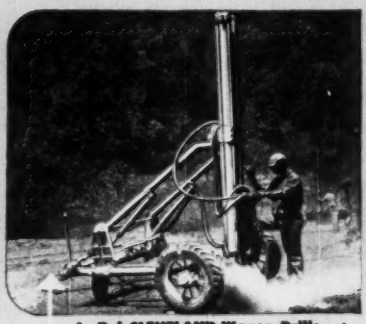

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OBITUARY

Chester S. Allen, 70, president of Lockwood Greene Engineers, Inc., at his retirement in 1950, died at Auburndale, Mass., Jan. 6. Since 1910 when he joined the firm he supervised construction work in South America, Turkey, Russia and other countries. He studied at Brown and Cornell. He had edited several books dealing with the subject of reinforced concrete.

Donald Graham, Indianapolis engineer, died Dec. 21. From 1933 to 1937 he was chief engineer inspector for Indiana under the Public Works Administration. He designed many buildings, including the Crane Naval Ammunition Depot. He was a 1907 graduate of the University of Illinois.

Jack Mulvihill, 27, of Baltimore, Md., an engineer for the Maryland State Roads Commission, was drowned while skating at Lake Roland on Dec. 23. He was a graduate of Colgate University.

Theodore Pyle, 62, died at Lewes, Del., Dec. 31. Long employed on dock, bridge and dredging operations, he worked for the U. S. Army at Bordeaux, France, in the first world war. He was a Delaware state highway engineer for three years.

J. Fred Mollenkopf, 76, who had planned to retire Jan. 1 from his post as engineer of Mercer County, Ohio, died at Van Wert Dec. 19. He got his engineering degree at Ohio Northern University and for a time was in the engineering department of the Erie Railroad at Pittsburgh. In the first world war he served in France with the 112th Engineers and in the second war he helped build the airfield at Walnut Ridge, Ark. As Mercer County engineer he carried out one of the most extensive ditch improvement projects ever performed in Ohio.

Rufus Harvey Sargent, 76, with the U. S. Geological Survey for almost 50 years and a member of a Carnegie Institute expedition into the interior of China in 1903, died in Washington, D. C., Dec. 28. A graduate of Columbian College (now George Washington University) he spent his lifetime in government service. His travels for the Survey took him to Alaska 28 times. He produced the first modern maps of the interior of China.

(Continued on page 77)

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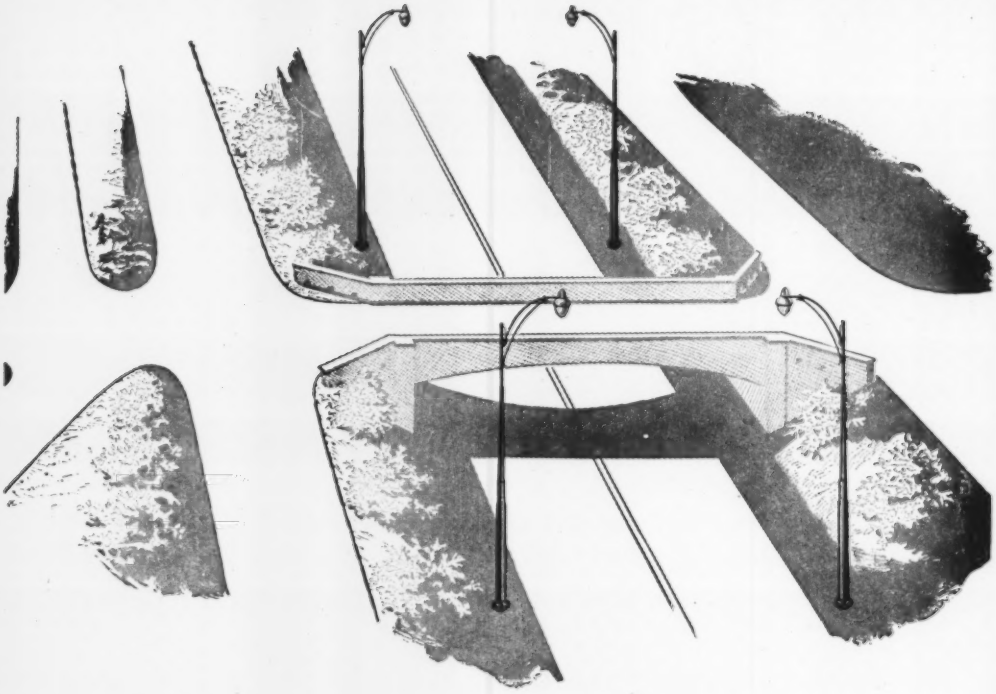

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UNITED STATES STEEL

Obituary . . .

Alfred Jones, 74, former Los Angeles County Engineer, died Dec. 21 in Pasadena. His connection with the county engineer and surveyor's office began in 1912. He was made head of the department in 1934 and served until his retirement in 1947.

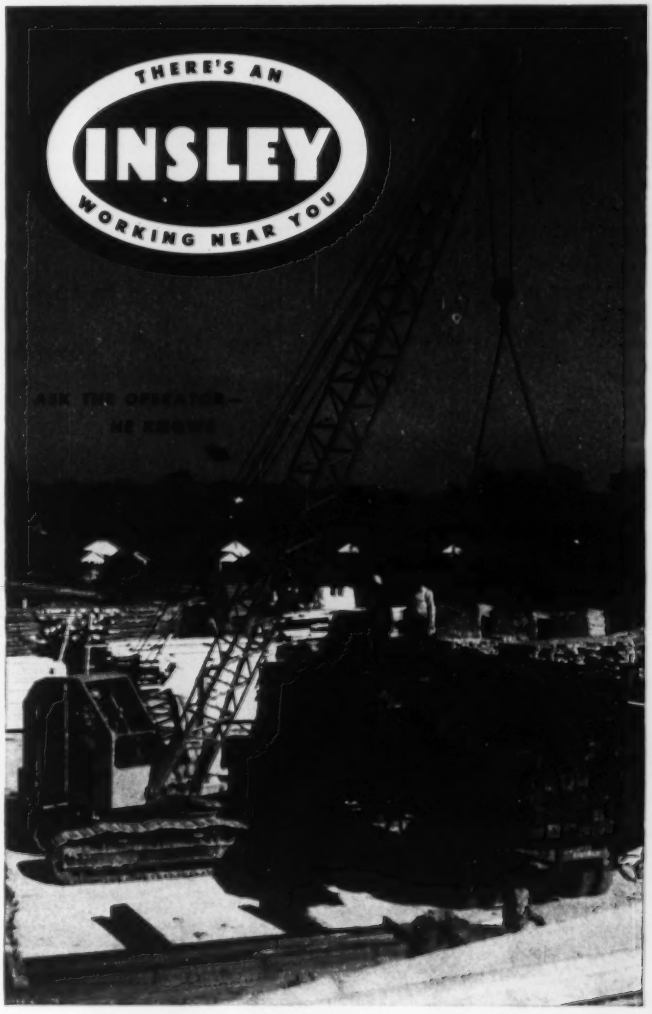
Lt. Col. John B. Harstone, 72, who worked on the construction of many major railroads, died recently in Parksville, B. C. He helped build the spiral tunnel at Field, B. C., and worked on other major engineering jobs across Canada and the United States.

Frank H. Bowerman, 73, former president of the New England Branch of the Associated General Contractors of America, died Dec. 22 in Cranston, R. I. He was graduated from the University of Maine in 1900. He was a civilian engineer with the Army Engineers.

Ernest M. Merrill, 73, civil and mining engineer, died Dec. 17 at Charleston, W. Va. A former consultant for the U. S. Engineers Corps at Pittsburgh, Pa., he developed the present lock plan for the Kanawha River.

Stanley C. King, 57, San Francisco structural engineer, died in San Mateo, Calif., Dec. 27. He was known for his design for concrete barges produced by Belair Shipyards, South San Francisco, during World War II. He drew plans for many northern California hospitals and other buildings, including the San Francisco Barrett-Lick garage, now under construction, in which concrete girders are used in place of steel. A graduate of the University of California, Mr. King had been junior partner in Ellison & King, San Francisco, since 1942. He worked for Barrett & Help, the California Division of Architecture, and Inland Steel Co., Chicago. He also designed the Tower of the Sun and other buildings for the San Francisco World's Fair in 1939-40.

Edward Metzger, 87, construction engineer, died Dec. 30 in Buffalo, N. Y. For 25 years he was in charge of construction of various institutions, directed the erection of the Masten Ave. Armory, the State Office Building and many other projects in Buffalo. In 1909, he was construction superintendent in the State Department of Architecture. When the agency was merged with the Department of Public Works he became a construction engineer, and retired in 1935.



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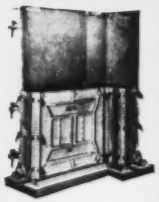

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UNIT PRICES BID BY CONTRACTORS

Palisades Dam tunnel, Idaho

Seventeen bidders competed for the Bureau of Reclamation contract for open cut and tunnel excavation of the Palisades Dam, Palisades Project on the Snake River in Bonneville County, Idaho. The engineer's estimate is $2,049,000. Bids received November 27 ranged from the low bid of $1,242,700 to $3,038,500.

Work is to begin 15 days after receipt of notice to proceed. Completion within 230 days is required with liquidated damages set at $300 per day, of construction substation within 45 days with a $5 a day penalty.

The Government plans to furnish the following materials: all electrical materials and equipment for the construction substation and service building, all materials for building the substation fence and for the woodpole substation structure, and insulating oil for oil-filled equipment and filter press if these are required.

Minimum wage rates range from $1.625 per hour for common labor to $2.20-2.55 for skilled labor.

Bidders include:

1C	J. A. Terteling & Sons, Inc., Boise, Idaho	$1,242,700
2	Macco Corp., Paramount, Calif.	1,576,700
17	Peter Kiewit Sons' Co., Omaha, Neb.	3,038,500

Bids: 11-27-51 Items	Unit	Quantity	Unit prices 1C	2
Exc, common in open cut	cy	2,000	$10.05	$3.00
Exc, rock, in open cut	cy	5,000	10.05	3.00
Exc, all cl, in tunnels	cy	83,000	10.05	13.10
F&p permanent str st! supports, steel tunnel liner plates & steel lagging	lb	2,000,000	.157	.23
F&i tunnel roof support bolts	lf	3,000	1.40	.80
Construction substation	ls	.....	20,000	6,000

Baytown Tunnel, Tex.

Farnsworth, Chambers, Inc., contractors on completion of the subaqueous Baytown Tunnel at Houston, Texas, on which bids were taken September 11, could not start work until January, 1952 due to the 4-5 month delay in deliveries of reinforcing steel. The Texas State Highway Dept. awarded the contract September 18. Parsons, Brinckerhoff, Hall & Macdonald of New York are the engineers.

The winning bid of $3,748,231.90 was 6% under the next lowest and 27% below the high bid. This brings the total cost up to $8.5 million. Contract 1, at $4.8 million for constructing and sinking nine pre-fabricated tunnel segments was completed December 3, 1951 after two time extensions. Unit bids are available upon request, ENR 8/18/49.

The new work consists of two 226-ft. tunnel sections, including ventilating buildings, to be constructed in open cut, and two 551-ft. open approach sections. In addition, the contract calls for construction of a garage & maintenance building and a crash truck garage, as well as plumbing, drainage, and electrical work (including tunnel lighting, mechanical work, and tunnel ventilating system.) Ceramic tile and architectural terra cotta will be used the length of the tunnel.

Under the terms of the contract, work must start within 30 days of October 8 and be completed within 500 days of the starting date. The contractor appealed unsuccessfully to the Texas Highway Dept. for postponement of the starting date until January 1, 1952. For each day over the 500 limit there is a sliding penalty scale based upon the amount of unfinished contract. Where this is $5,000 or less, the liquidated damages are $10 per day; $5,001-20,000, $15 per day; $20,001-50,000, $25 per day; $50,001-100,000, $50 per day; over $100,000, $75 per day.

All materials will be supplied by the contractor.

Minimum wage rates start at $0.85 for laborers. Semi-skilled rates range from $1.00 per hour for pump men to $1.50 for tile setter's helpers. Air tool operators start at $1.05 and dozer operators (under 55 h.p.) at $1.20. Skilled labor starts at $1.35 for concrete batch plant operators, with dozer operators (over 55 h.p.) starting at $1.50, and crane operators (¾ yd or more) at $1.75. Electricians and plumbers start at $2.00.

For all hours over 40 time and a half is paid, but work on legal holidays is paid at the regular rate.

Bidders include:

1C	Farnsworth, Chambers, Inc.	$3,748,231.90
2	San Jacinto Equip. & Garner, Inc.	3,978,543.19
4	Spencer, White & Prentice, Inc.	5,134,258.30

Bids: 9-11-51 Items	Unit	Quantity	Unit prices 1C	2
Precast & cut cover tunnels				
C pvt wear surf	cy	880	$28.00	$32.25
R stl, wire fabric, pvt	sy	7,350	65.00	2.10
C1 A concrete	cy	13,045	48.00	57.00
Reinf steel	lb	1,257,935	0.13	0.22
Struct steel	lb	108,471	0.35	0.42
Railing, tunnel	lf	3,000	6.75	11.50
Sand fndn crse	cy	1,220	4.50	0.91
Compact sand fill	cy	13,000	0.65	1.40
Embankment	cy	330,000	1.39	0.90
Ord backfill	cy	135,400	1.10	0.90
Waste dep in spoil area	cy	10,000	0.50	0.86
Unitr thr piling	lf	17,680	2.50	1.85
Prec or pip conc pil	lf	32,226	6.00	14.00
Tunl & appr wtrprf 4-ply	sy	8,180	6.50	5.75
3-ply	sy	3,420	5.00	4.35
Asph plk prot crse	sy	6,033	4.00	2.75
Preformed exp joint filler, bit; for prot crse	sy	2,080	3.00	4.70
Fr air fluss	ea	32	250.00	120.00
Ventilation bldg	ls	1	528,562	472,366
Garage & maint bldg	ls	1	53,577	64,813
Crash truck garage	ls	1	30,456	34,270
Plumbing & drainage	ls	1	175,000	131,243
Ventilation system	ls	1	100,000	113,695
Electrical work	ls	1	500,000	484,481
Copper lined drain chan	lf	100	15.00	5.25
Rough'g cone over 500 sy	sy	500	0.85	0.90
Mrtr scrtch coat 1/2" or less	sy	16,200	1.15	1.25
add "1 3/8" or less	sy	1,000	1.15	1.25
F&i ceram vit gl tile	sy	147,100	2.85	2.40
F&d xtra ceram vit gl tile	ls	1	500.00	831.00
Arch terra cotta	sf	16,000	4.00	6.40
Niche trim covrs & doors	ls	1	4,500	5,869
Fr air fluss adjust	ls	1	2,500	3,325
Fire extinguishers	ea	24	85.00	70.00

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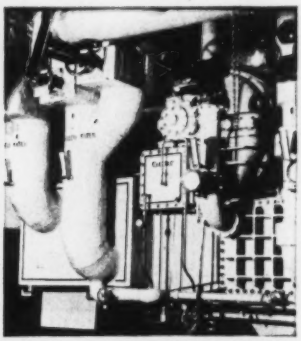
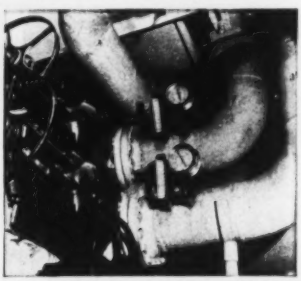


Piping for refrigeration machines, ranging up to 14 inches, is trouble-free. Use of TUBE-TURN Welding Fittings also speeded up erection of piping, since most assemblies were shop-welded, then tied into the systems they serve. Insulation was applied easily and is permanent.



District heating plant supplies steam at 150 psi. Steam is then sent through headers fabricated with TUBE-TURN Welding Fittings ranging up to 12 inches, and distributed via steam stations. Optimum flow conditions have been obtained and maintenance overhead minimized.

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A total of 8,000 tons of refrigeration is available for air conditioning.

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Unions, contractor approve mediation

Labor and management at the $500 million atomic energy project near Paducah, Ky., have made a significant stride toward preventing work stoppages.

Building trades unions and F. H. McGraw & Co., principal contractor, have agreed to let the Atomic Energy Labor Relations Panel serve as the final mediation authority in labor-management disputes. For labor, this is a major change in policy (ENR Nov. 8, 1951, p. 23). Up to now, the trades have vehemently denied the panel's jurisdiction.

Since early in January 1951, the project has been the scene of some 29 work stoppages, estimated by the Atomic Energy Commission to have cost 900,000 man-hours, and costing labor more than $1 million in pay.

The new agreement marks the first time since the project started that both the building trades and management are on record with a joint attempt to prevent further work stoppages on the job currently employing more than 11,000 construction workers.

• **Procedure outlined**—Representatives of the Paducah Building and Construction Trades Council, made up of 18 AFL craft unions employed on the project, and representatives of McGraw met with the four-man panel in the Irvin Cobb Hotel to draft the agreement. A three hour session produced these provisions:

(1) Either the union, McGraw, or the AEC may ask the panel to take jurisdiction in a dispute. The panel will then have 15 days in which to decide whether it will take jurisdiction. When it does, neither party may withdraw the dispute from the panel until after the panel has had the case for 30 days. Then the party withdrawing must give 20 days notice prior to withdrawal.

(2) While the panel is investigating a controversy, neither labor or management will halt work.

(3) Use of other means for settling disputes is encouraged, but the panel will be the mediation service of last resort.

The agreement does not apply to jurisdictional disputes. Under present procedure the company has the right to make work assignments pending action of the AFL National Joint Board for Jurisdictional Disputes.

• **Background**—The four-member panel, organized at the suggestion of President Truman to help avert or settle strikes affecting the atomic energy program, is neither controlled by or connected with the Atomic Energy Commission. Known as the "Davis panel," it consists of William H. Davis, chairman; Donald Strauss, secretary; Frank P. Douglass; and Edwin Witte.

It went to Paducah early this month at the request of the contractor to investigate a walkout of carpenters. The carpenters agreed to submit their grievances—shortly after the panel arrived.

Employers pick labor man as officer

Jack Burns . . . Labor leader now tells employers.

In an almost unprecedented action, the directors of the Cleveland, Ohio Building Trades Employers Association have reached out to hire a prominent local labor leader as executive secretary of their organization. The Cleveland contractor group's members (like similar organizations in New York and elsewhere) do most of the negotiating with labor over wages and working conditions.

Principal figure was Jack F. Burns, who succeeded the late Albert Dalton, as executive secretary—hence chief consultant to employers—of the BTEA.

• **Labor leader**—Until he accepted his new job, Burns was president of the Cleveland Federation of Labor (AFL) and business agent of the Cleveland Building Trades Council.

His labor background goes back to

(Continued on page 82)

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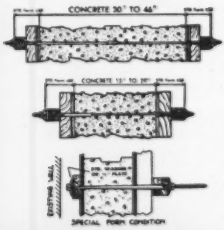

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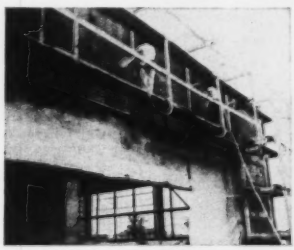

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Labor . . .

1909, when he became an apprentice in the plastering trade. Four years later he held a journeyman's card—but he did not begin to emerge as a coming power in labor union ranks. In 1922, he was named assistant business representative of a plasterers union local; three years later he was business representative for the whole union in the city; and in 1942 he became business representative for the city's building trades council.

In 1946, Burns became president of the Cleveland Federation of Labor, making him titular head of all AFL organizations in Cuyahoga County.

• **Experience**—With Dalton (a close friend) Burns entered into almost constant contact with Cleveland contractors and builders. Employers said that the fairness he exhibited in dealings with them played a major part in his selection for the BTEA post. (The job carries a reported $19,000 yearly salary.)

As executive secretary, Burns' chief value will be in a consulting capacity, since—unlike the BTEA setup in New York City, for example—direct negotiations are almost always carried on by representatives of the particular craft and the particular contractors involved.

Additionally, he will play a large part in the settlement of jurisdictional disputes.

• **History**—Burns steps into an organization that has established an excellent labor record in its 36 years of existence. Organized in 1916, the Cleveland BTEA is now made up of general building and construction contractors and subs, with a principal purpose of promoting cooperation between employer and worker.

Within the association, also, are 19 arbitration boards empowered to work out grievances, disputes and wage agreements with the various trades and the contractors. Additionally, the association maintains full records of such matters as cost of living indices, current agreements both on a local and national basis, employment trends and other statistics; and various committees concerned with training apprentices in the trade.

Labor briefs . . .

• **Raise?**—Contending that the new rate would be "more of a stabilization", the lathers' union and employers at Seattle, Wash., have petitioned the Construction Industry Stabilization Commission for a scale of $3 an hour instead of the present $2.87½. Union officials said the $3 rate is already being paid by many contractors in the area.

Rapid amortization report

Industrial build-up advanced—demand for structurals may ease

The tax amortization concession has been the biggest single aid to industrial plant construction being used by the government. According to Charles E. Wilson's January 1 report to the President a total of $11.4 billion have been issued during the past year. (see chart.)

Now, the mobilizers—at long last—have come up with a detailed report on the actual progress of $10 billion worth of this plant building program.

The report is taken from information received from the companies which have gotten one, or more, of the more than 4,000 individual certificates of necessity issued so far.

• **The Scoreboard**—Here's what the "expansion progress report" reveals:

1. Roughly 46% of the total dollar cost of the expansion program—or about $4.5 billion—was in place on December 31. About 35%—or $3.5 billion—was in place September 30.

2. Construction accounts for about 30%—or about $3 billion—of the total cost of the expansion, the balance of the cost being mostly equipment.

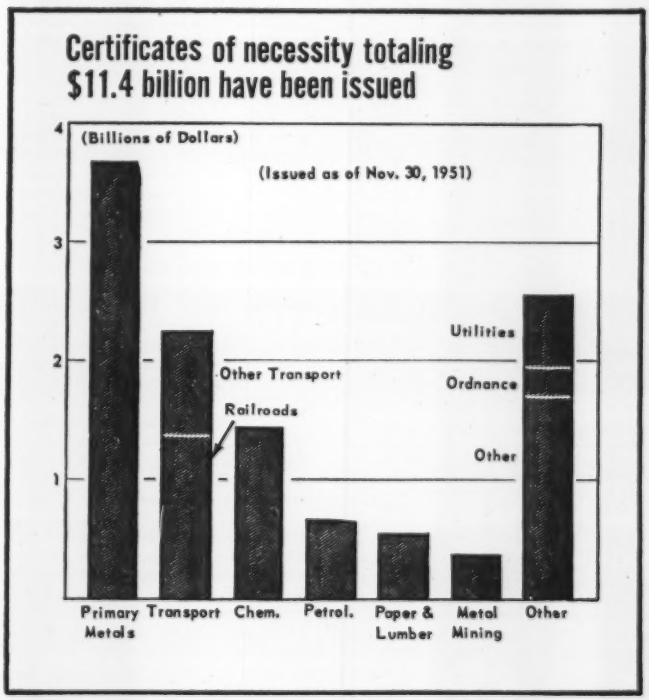
3. Of the construction part of the program, about 33% of the total value—or $1 billion—was in place as of September 30.

4. Because of shortages—structural steel, copper wire and cable, and the like—the "value put in place" during the third quarter was 17% less than the companies estimated at the beginning of the quarter.

Value of projects actually completed during the third quarter was $883 million, or 11% less than the amount estimated at the beginning of the quarter.

• **Steel shortage easing**—This report issued by the Defense Production Administration gives the first factual support for claims that there may be an easing of the supply of structural steel and other critically short construction materials yet this year.

While the report doesn't say so specifically, projections of the charts



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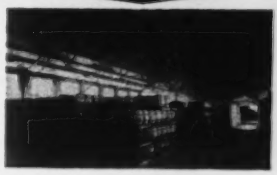

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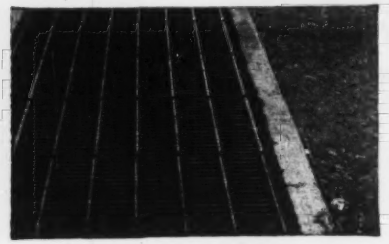

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Construction business . . .

used indicate that something more than $7 billion of the $10 billion total will be in place by the end of the third quarter this year. If this is true, then the squeeze on structural steel should be over by that time.

As the report notes, the huge construction program is mostly in the early stages of completion—"at the stage where the use of structural steel controls the rate of progress." By the end of the third quarter the largest part of the construction will be completed or well beyond the point of peak demand on structurals.

This would seem to support the mobilizers' prediction that there will be structural steel available then for construction projects which they have deferred.

The largest single industrial expansion program is for steel—about $2.1 billion worth of steel works and rolling mills, and $339 million of blast furnaces.

Program farthest along is that for improving railroad operations. As of December 31, the $1.1 billion program was 83% complete—mainly because this is primarily an equipment program, with very little construction involved.

However, the new plant programs for a number of other industries as of January 1 are either around or above the half-way mark measured by value in place: aircraft at 67%; industrial organic chemicals at 60%; and electric light and power, cement, and electrical machinery, around 50%.

However, many of these are still listed as "behind schedule": industrial chemicals, steel, aluminum, heavy riveted pipe works, machinery and aircraft plants.

State to buy steel, sell to contractors

Confronted with numberous delays in major highway projects because of the lack of steel, the state of Rhode Island is going into the steel market on its own.

State Public Works Director Philip S. Mancini announced that Rhode Island will buy steel needed for the first stage of the $3 million Meshanticut Green highway overpass, then sell the steel, at cost, to the successful bidder when the project is let.

• **Will take bids soon**—Construction of the overpass is scheduled for spring and summer, 1952. Bids will be asked soon.

The public works director said the decision to enter the market for steel was made on the advice of the federal Bureau of Public Roads.

Civil Defense Authority gets "processing" power

The National Production Authority has given the Federal Civil Defense Administration the authority to handle its own construction applications.

This gives the FCDA the right to assign ratings and to issue allotments of steel, copper and aluminum.

In an amendment to Delegation 14, NPA permits FCDA to process applications under order M-4A for construction of buildings, structures or projects to be used exclusively for civil defense purposes.

Cost index steady

The Aberthaw Index of the cost of industrial building remained practically stationary during the fourth quarter of 1951, the firm reported. The index now stands at 373.7.

Shortage brings profit

Rhode Island is making a profit on the steel shortage.

The steel shortage and other defense emergency construction delays have put the state into a new business —the business of reinvesting, for short periods of time at higher interest rates, money borrowed to finance construction projects.

Reinvesting taxpayers' dollars is no innovation in public fiscal practice. One of the stated functions of the state treasurer is to use sinking fund and reserve monies to help minimize the carrying charges on the public debt.

But short-term investment of capital expenditure funds, for 90 days or six months, until material shortages can be overcome, is a new activity that is netting the state a tidy little profit. • Example—Recently, State Treasurer Raymond M. Hawksley put $1 million of some $1.3 million borrowed to finance a new gymnasium at Rhode Island State University into 90-day U. S. Treasury bills at 2¼% interest. Because the bonds themselves draw only 1¾%, Rhode Island chalked up a $3,500 profit on the deal.

Delays are also slowing completion of the state's multi-million Blackstone Valley Sewer project, and the treasurer is using a large portion of these funds in a similar manner. End result: A reinvestment business that is bringing the state some $75,000 annually that it would not otherwise receive.

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FINANCE

Mass., R. I. to finance industrial building

Driving to hold a steady economic base, two New England states this week were asked to join the parade of states offering inducements—in the way of sites or actual construction—to attract new or expanding industries.

Legislation introduced both in Rhode Island and Massachusetts, in response to recommendations of their respective governors, called for establishment of state bodies whose sole purpose would be the promotion of the state economy by the principal means of obtaining sites for industrial plants, building new plants on those sites, or reconstructing or rehabilitating structures that may already be on such sites.

• **Not new, but different**—Such legislation would be closely akin to similar programs already in effect in at least four southern States (Alabama, Kentucky, Mississippi and Tennessee), but the Rhode Island proposal carries one proviso far different than anything now in existence:

Bonds or other securities issued to finance the acquisition of land and construction of factories would not be exempt from federal income taxes.

Additionally, in both states these newly-proposed laws would place the financing at the state, rather than the municipal, level; and payments would be made to communities in lieu of taxes.

(The southern states have laws authorizing municipalities to issue revenue bonds to pay for construction of plants that later are leased to private industry. In all four states these bonds are exempt from federal taxation. Such a financing procedure has several advantages for industrialists: Because the securities are tax-free, interest rates are low; also rent paid is an expense allowed before income taxes. Several other states—Maine, New Hampshire, Vermont—have authorized creation of privately financed and operated credit corporations to provide credit for new or expanding business.)

• **Answers bankers**—The proposals concerning tax exemption of securities are seen as an answer to growing protests from investment bankers to the use of tax-exempt bonds to finance what the bankers contend are purely private investments.

The bankers—in recent conventions and in private advices to credit managers and municipal and state officials—have questioned the soundness of

extending municipal credit into these fields. They have also made clear a warning that continued use of credit in this manner might lead to pressure for federal legislation that would abolish tax exemption for all state and municipal securities.

(The pressure from the bankers is more than an idle threat. A recent offering of municipal securities to finance a plant expansion in one southern state brought not a single offer from an out-of-state underwriter.)

• **The plans**—As proposed in the two states, the plans differ only slightly.

In Rhode Island, the legislation would create an Industrial Development Corporation, with a capitalization of $1,000,000 subscribed entirely by the state (through purchase of the entire capital stock). Nine directors appointed by the governor would direct the operations of the corporation.

The new IDC would be authorized to "obtain by gift, purchase or otherwise" real estate and industrial sites, build plants on these sites, or rebuild existing structures, then lease the property to private companies at rentals that would include repayment of principal, interest and fees in lieu of taxes. The corporation could borrow money, mortgage property, issue notes, bonds or other papers, with its assets as security.

The Massachusetts plan calls for establishment of a public industrial trust fund, to "build and lease industrial plants for new and expanding industries." The fund would be empowered to issue revenue bonds to finance construction of new plants for leasing to industry. The plants would be leased on a self-liquidating basis, and, although the facilities would be tax-free, the lease would provide for payment of fees in lieu of taxes to local communities.

(In his message to the Massachusetts legislature, Governor Devers commented that the plan might conflict with the state constitution, and suggested that if proposed legislation does conflict, the constitution be amended.)

• **Reasons**—There's ample force behind the drive in New England to attract new industry, and to hold existing plants. A rather long postwar trend was down for New England, while it went up in other areas of the United States. (ENR Dec. 6, 1951, p. 144).

Massachusetts and Rhode Island—although sharing the rise general in area—want to stay on the bandwagon.

Picture shows how a Sauerman Slackline Cableway digs gravel deep under water and hauls the material to top of screening plant. Swinging in a wide arc, the machine moves a huge yardage at one setup of the mast.

SAUERMAN Method . .
Simplifies Material Handling

Engineers and managers in construction, mining, processing, public utility and other industries find that many problems of handling materials can be simplified by using one or the other of the various types of Sauerman Cableways and Power Drag Scrapers. These machines offer the particular advantage of being able to span a large area and move material rapidly from point to point anywhere within that area.

The economic advantages of Sauerman Scraper and Cableway machines are as great as their operational advantages. The first cost of a Sauerman installation is reasonable, maintenance amounts to very little, and the simplicity of operation makes it possible to place the control of even the largest installation in the hands of one operator. Moreover, the equipment is very flexible; can be adapted easily to changing conditions.

Every buyer of a Sauerman machine profits from the 41 years of experience of Sauerman engineers in designing and operating scraper and cableway equipment. We study his needs, then suggest the type and size of machine that will meet his requirements most economically.

Write us about your interests and we will send illustrated catalogs by return mail.

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R. H. Moeller Co., 9825 Delmar Blvd., St. Louis 5, Mo.
Ole K. Olsen Co., 823 Perdido St., New Orleans, La.
Phillip D. Barnard, 2038 Addison, Houston 5, Tex.
Western Steel Prod. Co., 1750 W. 10th Ave., Denver 4, Colo.

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Phone: Essex 2233

PHILADELPHIA

Photo courtesy of Philadelphia Chamber of Commerce

Skyline of historic Philadelphia as seen from the Philadelphia Museum of Art looking toward the center of town along the Benjamin Franklin Parkway.

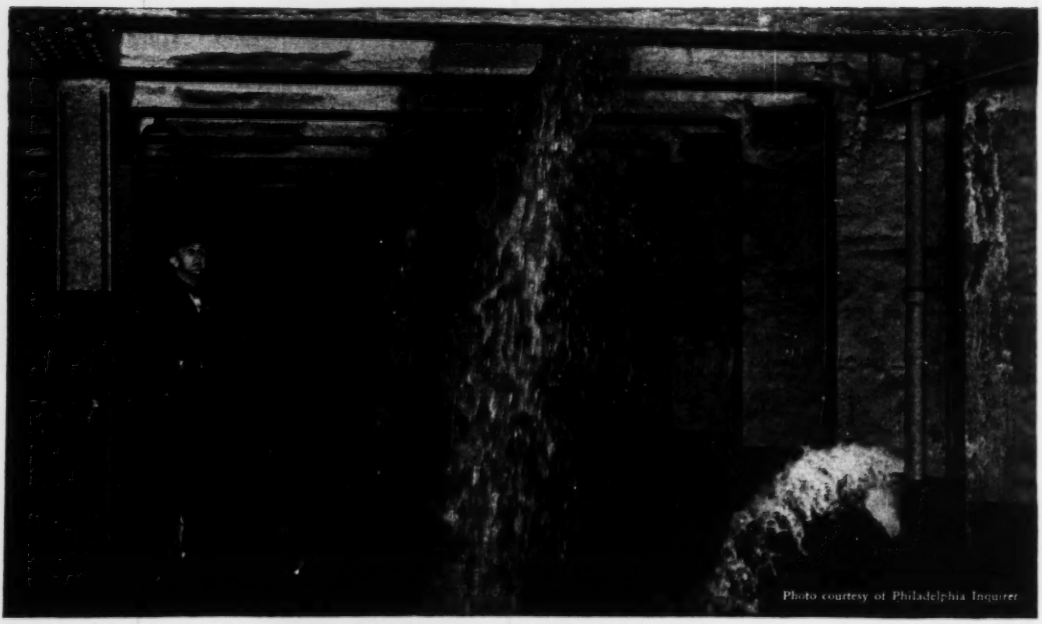


Photo courtesy of Philadelphia Inquirer

The scenic and well-planned municipal picture (seen at top of page) formerly was frequently spoiled by flooding occurring in the below-ground subways.

Subway Flooding

RELIEVED BY ALLIS-CHALMERS 'SW' PUMPS

UNDER PHILADELPHIA'S HISTORIC STREETS, trouble used to strike after heavy downpours. Sudden rainstorms or main breaks frequently would feed water into the subways faster than it was removed, interrupting service. (See photo at lower left.)

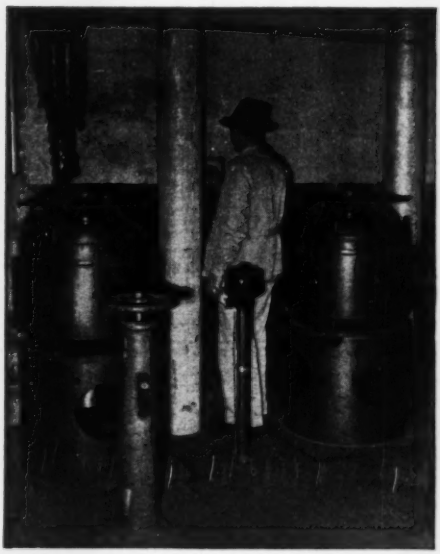
Since the subways are vital in providing transportation for this third most populous city in the U. S., these service interruptions could not be tolerated. And since the duty required positive and rapid response even though operating automatically and unattended, reliability and long life were important.

Allis-Chalmers, builders of the world's widest line of public works equipment, supplied the equipment to adequately dewater the Philadelphia subway. "SW" centrifugal sewage pumps, induction motors and transformers (all seen below as installed at the Wyoming station) were selected.

Two pumps are being installed at each of the six previously affected stations on the Broad Street subway. Located in dry wells alongside the wet well reservoirs, these emergency flood pumps automatically whirl into operation when the water level rises. They pump the water from the subways into the city sewer system at a rate of 6000 gallons per minute at each station.

Built in ratings up to 11,500 gpm, these new "SW" sewage pumps are liberally engineered to be suitable for critical, intermittent and unattended operation. The shaft is of extra heavy, heat treated carbon steel; sleeves are hardened stainless steel; anti-friction bearings are extra large, adjustable from the exterior. And the wear resistant casing is split radially for quick maintenance without disturbing intake or discharge piping.

When *your* city plans modernization or expansion, take advantage of Allis-Chalmers experience in designing and building public works equipment. For detailed information ask for bulletins . . . "SW" pumps, 08S7504; centrifugal pumps, 08B6146A; complete public works equipment, 25B6607. Call your nearest A-C office or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A-3486



Allis-Chalmers 60 hp induction motors drive Philadelphia City Transit subway pumps. Contractor for the installation was the William A. Bulman; equipment supplied through A-C Supply Co. of Philadelphia.

Allis-Chalmers "SW" centrifugal pumps in dry well as seen from above. They are driven from motors above by 12 ft shafts equipped with universals.

Power is supplied at full voltage from these Allis-Chalmers 37.5 kva *Chlorextol* liquid filled distribution transformers right at the load.

Chlorextol is an Allis-Chalmers trademark.

Installation photos courtesy of Dept. of City Transit

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—BUILDINGS

▲ **R. I., Pawtucket**—HOUSING—B.A. 1/30—Pawtucket Housing Auth., 560 Prospect St., superstructure, low rent housing, Weeden St., PHA R 1-2-2. Plans deposit $100. Charles A. Maguire & Assoc., 1015 Turks Head Bldg., Providence, archts. CD 9/1/50.

BUILDINGS

LOW BIDS AND CONTRACTS

Park Constr. Co., Inc., 40 Court St., Boston, Mass. CA $585,881. C-202 Contr. 1 INFIRMARY, Massachusetts Hospital School, CANTON, MASS. State, Dpt. P. Welfare, 600 Washington St., Boston, Mass. CD 12/27, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

† **N. J., Earle**—B.A. 1/24—P. Wks. Office, Third Naval Dist., 90 Church St., New York 7, N. Y., partial rehabilitation in Instransit Area, N.A.D. NOY 26783, Spec. 22906.

BIDS ASKED—BUILDINGS

N. Y., New York—HOUSING—B.A. 1/29—New York City Housing Auth., 63 Park Row, Zone 38, fdns. and general constr.; heating and ventilating; electrical work; plumbing; furnishing, installing elevators for Baruch Houses (Proj. No. NY 5-12), Sect. I, incl. Bldgs. 1, 2, 3, 4, 5, and 7 in area bounded by Franklin D. Roosevelt Dr., Delancey St., Baruch Pl., Stanton St., southerly portion of block bounded by Lewis, Rivington, Stanton Sts., and Baruch Pl. and block bounded by Franklin D. Roosevelt Dr., Stanton, Mangin and E. Houston Sts., Manhattan Boro. Plans deposit $75; $25 elevators.

† **D. C., Wash.**—PATHOLOGY—B.A. 3/4—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C. Armed Forces Institute of Pathology Bldg., incl. site imprvs. at outside utilities at Walter Reed Army Medical Center, Serial No. ENG 49-080-52-32. Extended date 11/21.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Ralph Myers Contr. Corp., Salem, Ind., CA. $2,499,954. T. R. 21 relocated 6.69 mi. from Masontown northeasterly to beyond the village of McClellandtown, rein.-con. pavement up to 46 ft. wide with rein.-con. highway grade and separate and a prestressed, precast rein.-con. bridge across Brown's Run, Fayette Co. Bids Dec. 20. CD 12/27 under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

Harry C. Erb, Inc., 29 Bala Ave., Bala, Pa., CA. $1,439,408, 1.16 mi. divided highway of two 24 ft. concrete lanes on bridge across P. R. R. and canal and two 24 ft. lanes of bit. surf. with concrete divisor and earth median connecting with Lincoln Hy., T. R. 1, Morrisville Boro. and Falls Twp., Bucks Co. Bids Dec. 14. CD 12/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Montgomery Constr. Co.,** 803 W. Main St., Grove City, Pa., LB Bid 1, $998,000; Bid 2, $933,520, WAREHOUSE 1, pumphouse and reservoir for General Services Admin., Warehouse Facility Proj. No. 30-303, BINGHAMTON, N. Y. General Services Admin., General Services Bldg., 19 and F Sts., N.W. Wash. 25, D. C. Bids Dec. 26. CD 12/3.

Junction Homes, c/o Benjamin Levinson, archt., 168-25 Hillside Ave., Jamaica, N. Y. Owner Builds. Approx. $337,000. 30 one-family HOUSES in 75 and 73 Aves., 166, 167 and 168 Sts., FLUSHING, N. Y.

▲ **Brusca Bros.,** Cypress St., Pittsburgh, Pa., LB $694,000. twenty-three 2 story bsmnt., 25x112 ft., brick veneer HOUSING, Proj. Pa. 14-9, ALIQUIPPA, PA. Beaver County Housing Auth., Beaver, Pa. Bids Dec. 26.

▲ **Nicholas LeDonne,** 936 Gary Ave., Clairton, Pa., LB $476,000, 1 story, 80x385 ft., brick on block Walnut Grove Grade SCHOOL; LB $600,000, 1 story, part bsmnt., 85x340 ft., brick on block Homeville Grade School;

Branna Constr. Co., Bessemer Bldg., Pittsburgh, Pa., LB $750,000, 1 story, 165x449 ft., irregular, brick on block Edison Junior High SCHOOL, WEST MIFFLIN, PA. Bd. Educ., of West Mifflin, Terrace, Pa. Bids Dec. 27. CD 12/11.

James Keelty Co., 4200 Edmonson Ave., Baltimore, Md. Owner Builds. $720,000. Ninety 2 story, 20x32 ft., brick RESIDENCES, BALTIMORE, MD. Daniel A. Neumayer, 7908 Tilmont Ave., Baltimore, Md., archt.

Kamo & Heck Co., 7932 Wisconsin Ave., Bethesda, Md. CA $302,395. 1 story, 58x186 ft., brick, concrete block SCHOOL, Radnor Rd., Bethesda; 1 story, 58x186 ft., brick, concrete block Twinbrook Elementary SCHOOL, Ardennes Ave., ROCKVILLE, MD. Montgomery Co. Bd. Educ., Rockville, Md., Ronald S. Senseman, 327 Carroll St. N. W., Wash., D. C., archt.

Wm. E. Richardson, 8720 Flower Ave., Silver Spring, Md. CA 1 story, 100x550 ft., rein.-con. brick, cinder block OFFICE BLDG., SILVER SPRING, MD. Sterling & Scull, Newell Rd., Silver Spring, Md. Clifton B. White, 8055 13 St., Silver Spring, Md., archt.

Knowlwood Development Co., 10521 Pinewood Ave., Adelphia, Md. Owner Builds. $420,000. Seventy 1½ story, brick, concrete, concrete block HOUSES, Adelphia, UPPER MARLBORO, MD. Edmund W. Dreyfuss & Assoc., 1019 15 St. N. W., Wash., D. C., archts.

SOUTH

BIDS ASKED—BUILDINGS

Ky., Winchester—HOUSING—B.A. 1/23—Winchester Housing Comn., Winchester, 100 housing units; $750,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Glamorgan Pipe Co., Lynchburg, Va., CA. $191,805, Cont. 1, water and sewer extens., GASTONIA, N. C. City, Gastonia, N. C. CD 7/28/44.

Arthur Pew Constr. Co., Buckhead Theater Bldg., Atlanta, Ga., CA, $838,890, Div. 1, treatment plant, MARIETTA, GA. Cobb Co.-Marietta Water Auth., Marietta, Ga. Bids Nov. 12. CD 11/20, under LB.

Boh Bros. Constr. Co., 2400 Cypress St., New Orleans, La. CA $662,132. Gentilly Blvd.-New Orleans Terminal Co. underpass, NEW ORLEANS, LA. New Orleans Terminal Passenger Comm., 501 S. Saratoga St., New Orleans, La. Bids Dec. 31. CD 11/27.

BUILDINGS

LOW BIDS AND CONTRACTS

W. G. Salter & Lon Gammage, 1317 First Ave., Columbus, Ga., Owner Builds, $500,000. 75 RESIDENCES between River Road and Chattahoochee River, COLUMBUS, GA.

▲ **Wilters Constr. Co.,** 1397 S.E. 10 Court, Hialeah, Fla., CA, $1,020,000, BANK and STORE bldg., MIAMI, FLA. Sevalles Everglade Farms, Inc., c/o contractor.

Martin Constr. Co. & King Constr. Co., 3313 West End Ave., Nashville, Owner Builds. Approx. $500,000. 94 HOUSING units for personnel of Fort Campbell, CLARKSVILLE, TENN.

▲ **Greer & Kimbrough, Inc.,** Exchange Bldg., Memphis, Tenn., Owner Builds. Approx. $1,000,000. 126 APARTMENT units, MEMPHIS, TENN. CD 1/3.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Mich., Sturgis—SCHOOL—B.A. 1/22—City, Paul P. Yoder, secy. Bd. Educ., brick, concrete school. $300,000. Plans deposit $25. Warren S. Holmes Co., 2200 Olds Tower, Lansing, archt. CD 10/25/44.

Mich., St. Clair—SCHOOL—B.A. 1/23—Bd. Educ., George L. Thompson, secy., 2 story, brick, steel high school addn., Sixth St. $300,000. Plans deposit $25 refundable. Jahr-Anderson Assoc., Inc., 21904 Michigan Ave., Dearborn, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Paschen Bros., 2739 Elston Ave., Chicago, 47, Ill., LB $722,550, Upper Des Plaines Intercepting Sewer, Contr. 13, CHICAGO, ILL. Sanitary Dist. of Chicago, 910 S. Michigan Ave., Chicago, 5, Ill. Bids Dec. 21.

† **U. S. Eng.,** Clock Tower Bldg., Rock Island, Ill., cancelled bids to have been opened Dec. 20 constr. installing two 20,000 bbl. underground fuel oil storage tanks, appurtenances, etc. at Savannah Ordnance Depot Proving Grounds, Inv. No. Eng. 11-117-52-2, SAVANNAH, ILL. CD 11/28.

BUILDINGS

LOW BIDS AND CONTRACTS

S. M. Wilson & Co., 1616 Cleveland Ave., Granite City, Ill., CA, $860,000, 13 APARTMENTS, incl. 84 units MADISON, ILL. Madison County Housing Auth., 3 and Haller Sts., East Alton, Ill. Bids Dec. 18, awarded Dec. 28. CD 12/27, under LB.

▲ **J. F. Pritchard & Co.,** 908 Grand Ave., Kansas City, Mo., **The Lummus Co.,** 385 Madison Ave., New York, N. Y., and **Vulcan Copper & Supply Co.,** 120 Sycamore St., Cincinnati, O., CA, Total cost $38,000,000. PLANT, TUSCOLA, ILL. National Petro-Chemical Corp., Tuscola, Ill. CD 7/30.

Ward W. Ross Co., Pontiac, Mich. CA $300,000. brick SCHOOL, Proj. Mich. 51-C-9-4, WARREN, MICH. Bd. Educ., Warren Consolidated School Dist. 1, Green Ave., Warren, Mich. Bids Dec. 5. CD 11/30.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

† **N. M., Albuquerque**—HEADQUARTERS—B.A. 1/29—U. S. Eng., P. O. Box 1538, 2 story, bsmnt., 44x120 ft. rein.-con., masonry block headquarters bldg. addn., water, sewer, etc., Eng 29-005-52-19. Plans deposit $50. Extended date. CD 12/31.

Tex., Waddell (Br. Crane)—PLANT—Bids Asked—Gulf Oil Corp., Petroleum Bldg., Fort Worth, sulphur-recovery plant unit. $750,000. CD 1/2

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

10WA—State Hy. Comn., Ames,

R. B. Burch, Inc., 5091 3 Ave. S. E., Cedar Rapids, Ia., CA, $538,288, grading, 15.264 mi. F-887 (2) Linn Co. Bids Dec. 27. CD 1/3, under LB.

10WA—State Hy. Comn., Ames,

rejected bids Dec. 27, paving 0.327 mi. P-479 Mill Co., LB. $97,823. CD 1/3, under LB.

Humboldt Co. Drainage Dist. 13A, K. M. Dale, aud., Dakota City, Ia., received no bids Dec. 17 drainage imprvs. incl. 2,471 cu. yd. channel excav. 14,700 lin. ft. 1- to 30-in. drain tile, 5,828 lin. ft. 10- to 15-in. storm sewer, 27 beehive intakes, 11 manholes 893 cu. yd. rock excav., DAKOTA CITY, IA. Bids Dec. 17. CD 11/30.

† **United Enterprises, Inc.,** 2845 N. Roman St., New Orleans, La., LB $567,000. records and processing bldg., Inv. No. Eng 41-243-52-19, LACKLAND AIR FORCE BASE, (Br. San Antonio), TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Jan. 4. CD 12/17.

▲ **Thompson Pipe & Steel Co.,** 3001 Larimer St., Denver, Colo., CA, $410,000, Sch. 1;

Bethlehem Steel Co., E. 3 St., Bethlehem, Pa., CA $832,000, Balance, water line (pipe) incl. 88,000 lin. ft. 30 in., 500 lin. ft. 16 in. and 5,000 lin. ft. 14 in. steel pipe, COLORADO SPRINGS, COLO. City, City Hall, Colorado Springs, Colo. Bids Dec. 18, awarded Dec. 2. CD 12/27, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

The Weitz Co., Inc., 406 Fleming Bldg., Des Moines, 9, Ia., LB, $717,700, general contr. County HOSPITAL, MUSCATINE, IA. Muscatine Co., County Bd. Supervs., Court House, Muscatine, Ia. Bids Dec. 18. CD 12/5.

▲ **Parsons Constr. Co.,** Grain Exchange Bldg., Omaha, Neb., CA, Total $14,000,000. intake construction at Missouri River, a 60 thousand kw GENERATOR and BOILER, OMAHA, NEB. Omaha Public Power Dist., 17 and Harney Sts., Omaha, Neb. A. G. Johnson, c/o owner, ch. engr. CD 8/17.

▲ **Refinery Engineering Co.,** Wright Bldg., Tulsa, Okla. CA $3,350,000. REFINERY, EL DORADO, KAN. El Dorado Refining Co., El Dorado, Kan.

▲ **Refinery Engineering Co.,** Wright Bldg., Tulsa, Okla. CA $2,750,000. catalytic and polymerization cracking REFINERY units, PHILLIPSBURG, KAN. Consumers Co-operative Assn., Phillipsburg, Kan. CD 12/5.

(Continued on Page 92)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

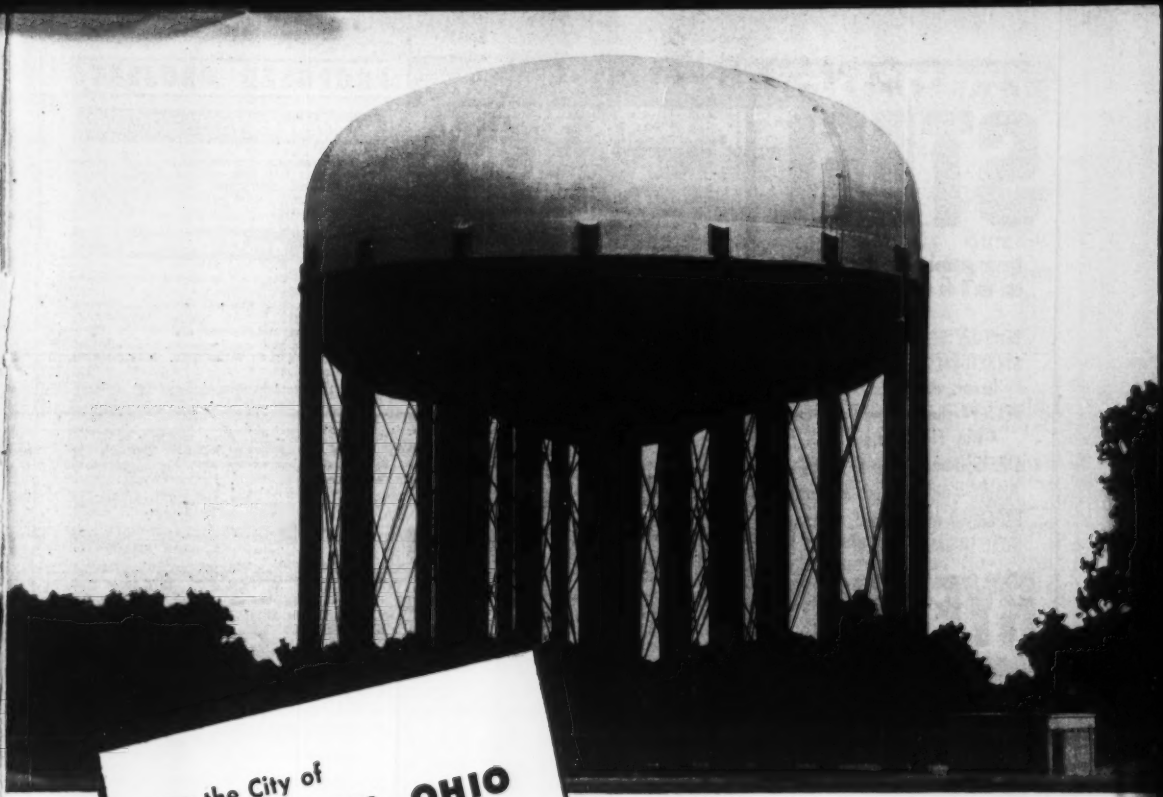
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects inviolved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily



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DALLAS (1), 1219 Praetorian Bldg.
SEATTLE . . . . . 522 Lane Street
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- BUILDINGS

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PENNSYLVANIA Drilling CO.
DRILLING CONTRACTORS AND MFRS.
PITTSBURGH 20, PA.

(Continued from page 90)

▲ **Ponsford Brothers**, 914 E. Missouri St., El Paso, Tex. LB $1,266,480, est. $300,000. Tex. 3-6, 150 HOUSING units, EL PASO, TEX. El Paso Housing Auth., El Paso, Tex. Louis L. Mollinary, 701 Caples Bldg., El Paso, Tex., archt. Bids Dec. 29. CD 12/12.

Brace & Carruth, 706 Garden Oaks, Houston, Tex., Owner Builds. $365,000. 25 DWELLINGS, HOUSTON, TEX. CD 8/15.

J. E. Leicher, 2402 Arbor St., Houston, Tex., Owner Builds. Approx. $336,000. 28 DWELLINGS, HOUSTON, TEX. CD 1/3.

D. D. Hutchison, 6319 Long Dr., Houston, Tex., CA. Approx. $376,500. STORES unit, HOUSTON, TEX. Southland Corp., 409 E. Main St., Garland, Tex. CD 1/3.

▲ **Robert E. Nesmith, Inc.**, 6738 Long Dr., Houston, Tex., CA. Approx. $1,000,000. BAKERY PLANT, HOUSTON, TEX. Peter Pan Baking Co., c/o P. E. Peterson, 12 and Jackson Sts., Omaha, Neb. CD 11/23.

Robert E. Nesmith, 6738 Long Dr., Houston, Tex., CA. Approx. $500,000. PLANT and OFFICE, HOUSTON, TEX. Francis Investment Co. 6738 Long Dr., Houston, Tex. CD 1/3.

▲ **Shelby Constr. Co. Inc.**, 1106 Canal St., New Orleans, La. CA. $4,293,805, est. $3,500,000. construct, manage, finance, 500 rental HOUSING units (FHA Proj. No. 112-80003 Air-1), Cavu Village Military Housing, Inv. No. Eng 41-243-52-10, WACO, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 12/31.

† **George Rutherford Constr. Co.**, P. O. Box 771, 915 E. Hazeldine St., Albuquerque, N. M., LB. $403,144, est. $300,000. Thoreau Day SCHOOL and facilities, THOREAU, N. M. Bureau Indian Affairs, Dpt. Interior, Interior Bldg., 19 and C Sts., N. W. Wash. D. C. Bids Dec. 27. CD 12/19.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Washington**—B.A. 2/7—Bureau Reclamation, Dpt. Interior, Ephrata, Wash., constr. Lake Lenore Pumping Plants 1 and 2 and intake and connecting channels, Columbia Basin Proj. situated 2 to 4 miles north of Soap Lake, Spec. DC 3629. Bids Sept. 20 rejected; adv. ENR 1/17. CD 19/28, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho. CA, $366,940, spillway rehabilitation of Black Canyon Dam, Boise Proj., Spec. DC 3614, IDAHO. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Dec. 21. CD 9/12/44.

WASHINGTON—State Hy. Dpt., Olympia,

Goodfellow Bros., Wenatchee, Wash., LB, $555,531 clearing, draining, grading, surf. 2.8 mi. Hys. 2 and 10 Monitor to Wenatchee, Chelan Co. Bids Jan. 4. CD 12/20.

▲ **Guy F. Atkinson Co.**, 806 Cascade Bldg., Portland, Ore., LB $1,957,400-$2,006,270 (400 days completion) pier and other dry dock facilities, Swan Island, PORTLAND, ORE., Port of Portland, 916 S.W. Washington St., Portland, Ore. Frederic R. Harris, Inc., Swan Island, Portland, 18, Ore., consult. engr. Bids Jan. 3. CD 12/18.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Webb & White, 7220½ Melrose Ave., Los Angeles, Calif., CA, $1,370,545, grading, etc. 0.7 mi. Hollywood Freeway between Hollywood Blvd. and Western Ave., Los Angeles Co. Bids Dec. 13. CD 12/19, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Otis Oliver, 1827 W. 145 St., Gardena, Calif., CA. $543,798, est. $398,000. El Rincon SCHOOL;

Johnson & Vedder, 3419 Hyde Park Blvd., Los Angeles, Calif., CA, $613,970, est. $534,000. Airport SCHOOL, CULVER CITY, CALIF. Culver City Unified School Dist., 4034 Irving Pl., Culver City, Calif. Bids Dec. 21, awarded Dec. 24. CD 1/2, under LB.

▲ **Lakewood Park Constr. Co.**, 5327 Lakewood Blvd., Long Beach, Calif., CA, $1,675,900, 185 frame, stucco DWELLINGS, NORTH LONG BEACH, CALIF. Lakewood Park Mutual Homes No. 8, 5327 Lakewood Blvd., Long Beach, Calif. Paul J. Duncan, 13310 Moorpark St., Sherman Oaks, Calif., archt. CD 3/30/50.

Vance M. Brown, 1226 Middlefield Rd., Palo Alto, Calif., LB, $309,917, Grand Elementary SCHOOL, SAN LORENZO, CALIF. San Lorenzo Elementary School Dist., P.O. Box 5, San Lorenzo, Calif.

▲ **The Austin Co.**, 618 Grand Ave., Oakland, Calif., CA., $2,500,000 design and construct, asbestos mfg. PLANT, SANTA CLARA, CALIF. Keasby & Mattison, Ambler, Pa. CD 10/26/50.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Dominion Constr. Co. Ltd.**, 150 West 1 Ave., New Westminister, B. C., CA, $2,000,000, PLANT addn. incl. paper room and storage quarters, NEW WESTMINSTER, B. C. Westminster Paper Co. Ltd., 5 Ave. and 16 St., New Westminster, B. C. CD 2/12/47.

N. W. Hullah Constr. Ltd., 1485 Clyde Ave., West Vancouver, B. C., Owner Builds, $800,000, four APARTMENTS incl. 81 suites, WEST VANCOUVER, B. C. Sharp & Thompson, Berwick, Pratt, 1553 Robson St., Vancouver, B. C., archts. Awarded Jan. 3.

PROPOSED PROJECTS

WATER SUPPLY

Ind., Logansport—Bd. P. Wks., Mayor G. F. Muehlhausen, chn., City Hall, WW sys., (rehabilitation) filtration plant addn., new mains, $500,000. A. Lefeber & Assocs., 2933 Woodburn Ave., Cincinnati, O., consult. engrs.

SEWERS, WASTE DISPOSAL

Ark., El Dorado—City, voted bonds, sewer imprvs. $585,000.

Calif., Live Oak—City, City Hall, sanitary sewerage system, $300,000. L. Cedric Macabee, 156 University Ave., Palo Alto, consult. engr.

Calif., Millbrae—City, City Hall, storm drainage system, $525,000, E. P. Wilsey & Co., 1126 Broadway, Burlingame, engrs.

Calif., Pittsburg—City, City Hall, sewage treatment plant, interceptor sewers, pumping station, etc. $800,000. Clyde C. Kennedy, 604 Mission St., San Francisco, consult. engr. CD 9/20.

Ill., Creve Coeur—City, sewage treatment works, and sanitary sewerage system, $625,000. Edward A. Fulton, Clayton, Mo. consult. engr.

Ia., Algona—City, sewage plant, $365,000. L. K. Ferguson, city engr. CD 1/3/50.

Kan., Chanute—City, voted $445,000 bonds Dec. 18, sewage plant, Reeves & Schlup, Chanute, consult. engrs. CD 12/6.

La., Mamou—Town, bond election Jan. 29, sanitary sewerage sys., natural gas system $376,000. CD 5/31/46.

▲ **Mass., Boston**—State, Metropolitan Dist. Comn., Sewerage Div., 20 Somerset St., Framingham Trunk Interceptor Sewer in Natic, Dover, Framingham and Wellesley, Over $2,000,000. CD 5/12/44.

▲ **Tex., Galveston**—City, City Hall, revenue bond election Feb. 9, sewage disposal plant, $1,650,000; sanitary sewer interceptor lines, $600,000. Joe J. Rady, 811 Insurance Bldg., Fort Worth, consult. engr. CD 9/19.

▲**Alaska, Fairbanks**—City, City Hall, treatment plant, replacement and disposal sys. extens. $4,350,000.

BRIDGES

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Garvin Co.—bridge over Washita River, on State Hy. 74 south of Lindsay, $250,000;

bridge over Washita River on U. S. 77, west of Wynnewood, $210,000.

Tulsa Co.—bridge over Bird Creek on U. S. 75 near Owasso, $125,000. G. H. Bittle, c/o owner, engr.

STREETS AND ROADS

▲ **MAINE**—State Hy. Comn., State House, Augusta, Portland—hy., Portland Expressway, $15,000,000. Sect. 1, Express Hy. $1,500,000. Thomas Worcester, Inc., 84 State St., Boston, Mass., consult. engr.

Mass., Haverhill—City, Mayor's Office, City Hall, plans by Arthur A. & Sidney M. Shurcliff, landscape archt., 14 Beacon St., Boston, by-pass three alternative routes proposed, River via Forest St. Monument St., Cogswell St. cross Little River $405,000-$770,000.

Neb., Seward—City, paving, $200,000, Henningson, Durham & Richardson, Standard Oil Bldg., Omaha, consult. engrs.

† **Tex., Bastrop (Camp Swift)**—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Goleman & Rolfe, 915 Woodrow St., Houston, road constr., $200,000. Turner & Beard, 915 Woodrow St., Houston, consult. engrs.

Tex., Midland—City, 200 blocks of asph. type street paving, $475,000, Wm. B. Nealey, city engr. CD 10/17/47.

Tex., Silsbee—Hardin Co. Road Dist. 3, Court House, Kountze, voted bonds, road imprvts., repairing, hard surf., 13 mi., $221,500; 8 mi., $140,000; 11 mi., $187,500; 8 mi., $140,000. McCormick & Teller, 2711 Grant St., Houston, consult. engrs.

▲ **Wash., Everett**—City, City Hall, $500,000 bond election Mar. 11, widn., paving, Pacific and Walnut Aves. and other streets, $1,000,000. G. G. Paine, city engr. CD 7/13/45.

Wash., Seattle—City, County-City Bldg., Zone 4, paving streets, alleys and sidewalks in vicinity of 37 Ave. S. W. and Fauntleroy, $286,985. R. W. Finke, city engr.

EARTHWORK, WATERWAYS

Kan., Garden City—City, defeated $250,000 bonds, drainage in north part of city. Wilson & Co., 223 N. Santa Fe St., Salina, consult. engrs.

AIRPORTS

† **Ill., Glenview**—WATER LINES, etc.—Dpt. Navy, Ninth Naval Dist., Great Lakes Training Center,

Great Lakes, Ill., plans by Pace Assocs., 53 W. Jackson Blvd., Chicago, Zone 4, water lines addns., Glenview Air Station, $250,000. Consoer, Townsend & Assoc., 351 Ohio St., Chicago, Zone 11, consult. engrs.

† Me., Limestone—GYMNASIUM—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., plans by John Howard & John Calvin Stevens, 2nd, 187 Middle St., Portland, gymnasium at Limestone Air Force Base, $300,000. CD 9/19.

† Mass., Chicopee Falls—RUNWAYS—U. S. Eng., 857 Commonwealth Ave., Boston, plans by Duffil Assoc., Morton St., Jamaica Plain, Boston, runways, taxiways, parking aprons, Westover Air Force Base, $300,000.

Tex., Corpus Christi—AIRPORT—City, City Hall, airport terminal and tower bldg. $100,000; runways, aprons, taxiways-parking apron areas, runway lights, reinforcing existing runways, $375,000. Engineers Associated, 1218 S. Staples St., consult. engrs. CD 7/3.

▲† Tex., Del Rio—AIR BASE—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Norton, Mayfield, Flood & Floore, Box 1169, Bryan, ordnance structures, Approx. $300,000; family housing units, Approx. $300,000; shops, Approx. $300,000; several misc. bldgs. Approx. $300,000; base supply warehouse, Approx. $100,000; outside area utilities, water, sanitary sewers, roads, gas, lighting, Approx. $200,000; reclamation yard and motor pool area, Approx. $150,000; air installations warehouse, Approx. $90,000; hydrogen and oxygen storage, Approx. $90,000; plans by Zimmerman & Bible, 500 Stuart St., Houston, service and gas station, outside utilities, Approx. $90,000; remote antenna farm, Approx. $100,000; motor pool, Approx. $75,000; jet fuel motor lube oil and auto fuel storage, Approx. $150,000; underground jet fuel storage, with truck fill stands, Approx. $300,000; plans by Niggli & Gustafson, Littlefield Bldg., Austin, group of 7 misc. bldgs., Approx. $300,000; parachute and dinghy shop and utilities, Approx. $100,000; cold storage and meat cutting shop, Approx. $90,000, all foregoing for Laughlin Air Force Base. CD 7/2.

▲† Tex., Randolph Field—BARRACKS, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Wilson, Morris & Crain, 3330 Graustark St., Houston, temporary and permanent type barracks, Approx. $1,000,000; motor pool area proj., Approx. $100,000. CD 5/2/51.

▲ Man., Gimli—HOUSING—Central Mortgage & Housing Corp., Kensington Bldg., Winnipeg, 200 two family housing units and 6 room school at air base, $1,400,000. W. J. Milhausen, regional engr.

▲ Sask., Moose Jaw—MESS—Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man., trainees and officers messes at R.C.A.F. Station, $1,000,000. W. J. Milhausen, c/o owner, engr.

LATIN AMERICA

Mexico, Atzcapozalco—Industrial Teenica Mexicana, S. A. 2a. privada del Recreo No. 76, plans metalic cloth factory. $300,000.

Mexico, Guerrero Acapulco—Mexican Govt., Sria. de Bienes Nacionales (National Properties Ministry), Lic. Angel Carvajal, sec., Mexico City, plans recreation resort for federal judges. $500,000.

Mexico, Hermosillo—Mexican Federal Govt., c/o Dpt. Communications, Mexico City, plans new airport bldgs., runways and facilities, $650,000.

Mexico, LaPaz—Mexican Federal Govt., c/o Dpt. Communications, Mexico City, plans new airport bldgs., runways and facilities. $425,000.

Mexico, Manzanillo—Mexican Federal Govt., c/o Dpt. Communications, Mexico City, plans new airport bldgs., runways and facilities. $375,000.

Mexico, Mexico City—Celulosa Nacional, S. A. Plaza Santos Degollado 10, plans celulose factory. $500,000.

Mexico, Mexico City—Cia de Materiales Carr, S. A., San Juan de Letran 11, Desp. 306, plans pearl products factory. $250,000.

Mexico, Nogales—Mexican Federal Govt., c/o Dpt. Communications, Mexico City, plans new airport, bldgs., runways and facilities. $550,000.

▲ Mexico, Rascon — Miguel Angel Vidal, Direction Conocido, San Luis Potosi, S.L.P., Mexico, plans sugar, alcohol, rutanol mill. $10,000,000.

▲ Santo Domingo, Ciudad Trujillo—Govt. of Dominican Republic, Ciudad Trujillo, plans 50,000 seating capacity sports stadium, $4,500,000.

PUBLIC BUILDINGS

▲† Calif., Monterey — SCHOOL — Twelfth Naval Dist., Federal Office Bldg., San Francisco, plans by Skidmore, Owings, & Merrill, 1 Montgomery St., San Francisco, Naval Post Graduate School, at Del Monte Hotel Site, near here, $6,615,000.

Calif., Oakland—DEPARTMENT STORE—City, City Hall, plans by Carl I. Warnecke & John C. Warnecke, Financial Center Bldg., remodelling 5 story department store. $500,000. Capwell, Sullivan & Furth, lessee.

▲ Conn., New Britain—HOUSING—City Housing Auth., 16 Armistice St., plans by Henry F. Ludorf, 100 Pearl St., Hartford, Moderate rental housing, $3,150,000. CD 12/20.

Del., New Castle—SCHOOL—New Castle Special School Dist., elementary school, Leedom Estates Area, $500,000. CD 7/16.

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Ga., Augusta—HIGH SCHOOL—Richmond Co. Bd. Educ., Court House, plans by F. Arthur Hzard, Marion Bldg., high school, Highway 78, $600,000. CD 6/22.

▲† **Ill., Great Lakes**—DEPOT—Dpt. Navy, Ninth Naval Dist., Great Lakes, Ill., plans by Childs & Smith, 20 N. Wacker Dr., Chicago, Zone 6, supplies depot, $4,000,000.

▲† **Ind., Crane**—PLANT, etc.—Dpt. Navy, Great Lakes P. Wks. Office, Great Lakes, Ill., plans by Friedman, Aischuler & Sincere, 223 W. Jackson St., Chicago, Ill., ammunition mfg. plant, $4,275,000; boiler operations bldg., $180,000. Day & Zimmerman, 1700 Sansom St., Phila., Pa., consult. engrs.

Ind., Evansville—HOUSING—Evansville Housing Auth., City Hall, plans by J. R. Kinkle, 320 N.W. 7 St., one story, 75 dwelling unit, brick Housing, $900,000.

Ind., Martinsville—HOSPITAL—Morgan County Memorial Hospital, Martinsville, plans by D. A. Bohlen & Son, 930 State Life Bldg., Indianapolis, Zone 4, 2 story, bsmt., irregular, brick hospital addn. $500,000.

▲ **Ind., Muncie**—HOUSING—Muncie Housing Auth., Muncie, plans by A. M. Strauss, Strauss Bldg., Fort Wayne, 250 unit housing, Avondale Pl., $3,019,661; 270 unit housing, Whitely Pl., $3,223,534. CD 9/25.

▲ **Kan., Coffeyville**—SCHOOL—Bd. Educ., $1,750,000 bond election Feb. 15, schools.

† **Mass., Ayer**—TRAINING FACILITIES—U. S. Eng., 857 Commonwealth Ave., Boston, addnl. training facilities, $306,000; shop bldg., $214,000. at Fort Devens.

▲ **Mass., Westfield**—DORMITORY, etc.—State, Dpt. Educ., 200 Newbury St., Boston, dormitory, $500,000; classroom bldg., $750,000 at State Normal School.

Mich., Flint—SCHOOL—City, S. S. Stewart Jr., chn., Bd. Educ., plans by Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, 2 story, bsmnt., brick, steel Northern High School addn., incl. gymnasium, cafeteria, $855,000; athletic field with ample parking facilities, Northern High School, $75,000. CD 4/12/51.

Mich., Sault Ste. Marie—JAIL—Bd. Supervs., Chippewa Co., brick, steel, concrete jail. $400,000.

Mich., Southfield—SCHOOL—Southfield Twp. School Dist., voted $950,000 bonds, brick, steel elementary school addn. and gymnasium unit. CD 3/17/50.

Minn., Ortonville—SCHOOL—Bd. Educ., Ortonville, plans by F. W. Jackson & Assoc., St. Cloud, grade school, remodel existing high school. $500,000.

Minn., St. Paul—SCHOOL—Bd. Educ., F. E. Conner, supt., R. Hammel, School Bd. archt., 615 Court House, plans by W. Butler Co., 1300 Minnesota Bldg., school near Wheelock Parkway and Mississippi St., $425,000. CD 10/30/50.

Miss., Corinth—HOUSING—Corinth Housing Auth., Corinth, plans by B. A. England, Jr., Corinth, 100 housing units. $800,000.

Miss., Indianola—PLANT—City, c/o Frank Rinehart, Indianola, mfg. plant for Ludlow Mfg. & Sales Co., $700,000.

▲ **Mo., St. Louis**—HOUSING—St. Louis Public Housing Auth., Gerard B. Cleary, exec. dir., 901 Washington Ave., Zone 1, rein.-con., brick public housing, between Chouteau and Lafayette Aves., 12 Blvd. and 14 St. $10,000,000. CD 1/21/46.

▲ **Mo., St. Louis**—HOUSING—St. Louis Housing Auth., Arthur A. Blumeyer, chn. and Gerard B. Cleary, exec. dir., 901 Washington St., Zone 1, plans by Hellmuth, Yamasaki & Leinweber, Inc., 1313 International Office Bldg., 722 Chestnut St., Zone 1, Proj. MO 1-6 1,667 housing units, part of DeSoto-Carr Proj. bounded by Jefferson Ave., 18 St., Franklin and Cass Aves. $21,861,957. CD 12/28/49.

Neb., Lincoln—HOUSING—Lincoln Housing Auth., 20 Haskerville St., 50 unit housing. $400,000.

▲ **N. H., Dover** — HOUSING — Dover Housing Auth., Municipal Bldg., plans by Edward J. Shields, 1245 Hancock St., Quincy, Mass., 125 units four wood frame bldgs., Tolland and Whittier Sts. $1,375,000. Willis E. Littlefield, 339 Central Ave., assoc. archt. Hubbard, Lawless & Blakeley, 177 State St., Boston, Mass., mech. engrs. CD 12/3.

N. J., Woodbine—HOSPITAL—State Dpt. Institutions, State Office Bldg., Trenton, plans by Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., State Hospital, $500,000. CD 12/13/50.

O., Norwalk—SCHOOL—Bd. Educ., John N. Orebaugh, pres., plans by Harold Parker, Sandusky, school expansion and renovation program. $708,000. CD 11/14.

▲† **Okla., Fort Sill**—CLASSROOM, THEATRE, etc.—U. S. Eng., P. O. Box 61, Tulsa, Zone 2, plans by Paul Harris, Chickasha, 189,000 sq. ft., 2 story bsmnt., classroom, theatre and storage room bldg. $4,734,000. CD 6/25.

▲ **Pa., Phila.**—SCHOOLS—Bd. Educ., 21 and Winter Sts., plans by Aaron Colish, 117 S. 17 St., Junior High School, Mt. Pleasant and Lowber Aves. $2,500,000; plans by Engineering Consultants, 843 N. 19 St., school, 25 and Diamond Sts. $1,000,000. CD 2/8/45.

▲ **R. I., Providence**—HOUSING—Providence Housing Auth. J. H. Lyons, exec. Dir., 263 Chad Brown St., plans by Creer, Kent, Mather, Cruise & Aldrich, 423 Industrial Trust Bldg., housing extension, Hartford Park, $1,344,317. CD 3/7/50.

Tenn., Memphis—HIGH SCHOOL—Shelby Co. Bd. Educ., Court House, Negro High School. $500,000.

▲† **Tex., Bastrop (Camp Swift)**—BUILDINGS—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Golemon & Rolfe, 915 Woodrow St., Houston, quartermaster, finance, ordnance, telephone and telegraph offices, $500,000; cold storage and meat cutting plant and mess, $200,000; rehabilitation of post engineers office, dispatchers office, $300,000; post engineer utility shop, $250,000; station headquarters bldg., $300,000; rehabilitation motor, repair shop, oil lube and underground fuel tanks and non-insulated warehouse, $350,000; gas and service (fueling) station, $100,000; motor and equip. servicing unit, $90,000; railroad spurs, $150,000, Turner & Beard, 915 Woodrow St., Houston, consult. engrs. CD 12/5.

▲ **Tex., El Campo**—SCHOOLS—El Campo Independent School Dist., El Campo, voted bonds, modernization of school plant, $300,000; Negro school, $300,000; new high school, $400,000. Ford & Rogers, 228 E. Martin St., San Antonio and R. S. Cooley, 310 Tancahua St., Corpus Christi, archts. CD 12/26.

▲† **Tex., Fort Sam Houston**—COLD STORAGE, etc—HEADQUARTERS, etc.—U. S. Eng. 606 Santa Fe Bldg., Galveston, plans by John Linn Scott, Nalle Bldg. Annex, Austin, addn. battalion and regimental headquarters bldgs., Approx. $500,000, addnl. motor repair shop, Approx. $100,000, gasoline and oil servicing stations Approx. $90,000, addnl. oil housing units Approx. $85,000, The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs.; plans by Roy W. Leibsle, 3702 Almeda St., Houstin, barraacks, Approx. $3,000,000; plans by Wyatt C. Hedrick, consult. engr. and archt., Fort Worth Natl. Bank Bldg., Fort Worth, oil storage houses, Approx. $100,000, mess halls, Approx. $1,000,000, general storage shed or bldg. Approx. $90,000, locomotive and motor repair shops, $250,000, guard houses. CD 8/28, 7/12.

▲† **Tex., Fort Sam Houston**—COLD STORAGE, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Ralph H. Cameron, Transit Tower bldg., San Antonio, cold storage plant addn. $200,000; telephone bldg. $300,000; radio receiver bldg. $90,000; barracks, $450,000. CD 7/6.

▲† **Tex., Killeen**—HOUSING—Public Housing Admin., 1201 Connecticut Ave. N. W., Wash. 25, D. C. 270 rental housing units, $2,160,000; 130 "for sale" housing units, $1,170,000.

▲ **Wash., Tacoma**—COUNTY-CITY—Pierce Co., County Court House, City and City Hall, county-city bldg., $3,000,000. CD 3/20/50.

▲† **Alaska, Bethel**—HOSPITAL—Bureau Indian Affairs, Dpt. Interior, Alaska Native Service, Interior Bldg., 19 and C Sts., Wash. 25, D. C., revised plans by Foss, Malcolm & Olsen, Juneau, hospital. $1,775,000. CD 11/20, under LB.

▲ **Ont., Ottawa**—HOSPITAL EXPANSION—Civic Hospital Bd., C. E. Pickering, chn., Carling Ave., hospital expansion, incl. 5 story pathology wing addn., new admittance department and department addns., alterations, Approx. $5,000,000. CD 6/28/49.

▲ **Que., Montreal**—ADMINISTRATION—Catholic School Comn., 117 W. Ste. Catherine St., Montreal, plans by Gaetan Leborgne, c/o owner, administration bldg. E. Sherbrooke St., $1,000,000.

COMMERCIAL BUILDINGS

▲ **Calif., Los Angeles**—HOSPITAL—Mount Sinai Hospital, 208 W. 8 St., plans by Welton Becket & Assoc., 5657 Wilshire Blvd., 13 story, rein.-con. hospital. $2,500,000. CD 7/20/50.

Ill., Franklin Park—CHURCH—St. Gertrude's Parish Rose St. and Schiller Blvd., Franklin Park, plans by E. J. Belli, 8 S. Dearborn St., Chicago, 3, Ill. church, $600,000.

▲ **Me., Lewiston**—HOSPITAL—St. Mary's General Hospital, 318 Sabattus St., plans by Hayden, Harding & Buchanan, engrs., 470 Atlantic Park Sq., Boston, hospital addn. $1,900,000. CD 6/16/49.

▲ **Mass., Boston**—HOSPITAL—Children's Medical Center, 300 Longwood Ave., plans by Campbell & Aldrich, 38 Newbury St., Sect. 1, 9 story, bsmnt., rein.-con., masonry hospital, $3,000,000; Sect. 2, rein.-con., steel frame hospital, Blackfan St., $1,500,000; Sect. 3, rein.-con., steel masonry infants wing, Blackfan St., $1,500,000. Clerardon-Varney & Pike, 120 Tremont St., consult. engrs. CD 6/23/50.

Mich., Muskegon — SCHOOL—Catholic Central High School, Muskegon, plans by Edwin E. Valentine, 99 Miller Ave., 2 story, bsmnt., brick, steel high school, $500,000.

▲ **Miss., Jackson**—SHOPPING CENTER—Mart '51, Inc., Jackson, shopping center, $1,300,000.

Mo., Jefferson City—SCHOOL—St. Peter's Catholic Parish, Rt. Rev. Msgr. Joseph A. Vogelweid, pastor, and Immaculate Conception Catholic Parish, Rev. Paul V. Kertz, pastor, concrete inter-parish catholic high school. $300,000-$400,000.

▲ **N. J., Thorofare**—RESIDENTIAL DEVELOPMENT—Gregg Constr. Co., c/o George H. Johnson, 1325 Walnut St., Phila., Pa., residential development Delsea Drive. $8,200,000.

▲ **N. Y., New York**—APARTMENT—Saye Constr. Co., c/o Morris Rothstein & Son, 186 Joralemon St., Brooklyn, Zone 21, 6 story apartment, Wallace Ave. north of Brady Ave. $1,725,000.

Pa., Phila.—OFFICE and WAREHOUSE—Owner c/o Agent Michael A. Foley, Western Saving Fund Bldg., office and warehouse, Roosevelt Blvd. and Garland St. $450,000.

S. D., Aberdeen—OFFICE—Midwestern Corp., Aberdeen, doctor's office, $600,000.

▲ **Tex., Corpus Christi**—HOUSING—Pub. Wks. Officer, Eighth Naval Dist., Bldg. 16, Naval Station, New Orleans 12, La., plans by Wm. McClendon & Assoc., 127 N. Staples St., construct, manage and finance 340 housing units, at Naval Air Station, Contr. NOY 24063, $2,600,000.

▲ **Tex., Galveston**—DWELLINGS—Loomis Constr. Co., Post Office St., 22 conc. slab fdn., masonry dwellings, East End, $300,000; 28 frame masonry dwellings, south of Lindale Park, $325,000.

Tex., Greenville—HOUSING—Howard Homes, Inc., c/o Ross K. Prescott, 726 Huntley St., Dallas, plans by Milam & Roper, 1508 Buckner St., Proj. 1, addnl. housing, 40 units in South Greenville, $300,000; Proj. 2, 42 units, $315,000; Proj. 3, 45 frame units, concrete slab fdn., $338,000.

Tex., Houston—DWELLINGS—Canterbury & Brown, Home Builders Service, 7026 Lawndale St., 40 masonry dwellings in Oak Meadows sect. $435,000.

Tex., Houston—DWELLINGS—J. E. Leicher, 2402 Arbor St., 30 concrete slab fdn., brick dwellings, Nassau and Newkirk Sts., $360,000.

▲ **Tex., Houston** — HOUSING — MacGregor Investment Co., c/o Earl A. Gregg Overbrook Corp., c/o P. C. Stewart, 5308 Carrolton St., Proj. 1, 100-dwellings, $750,000; Proj. 2, 145 dwellings, $1,087,500; Proj. 3, 120 dwellings, $900,000; Proj. 4, 135 dwellings, $1,012,500, all foregoing in Overbrook Addn. area; Unit 1, 125 dwellings, $1,000,000; Unit 2, 110 dwellings, $880,000; Unit 3, 150 dwellings, $1,125,000; Unit 4, 135 dwellings, $1,080,000; Unit 5, 90 dwellings, $645,000; Unit 6, 85 dwellings, $637,500; Unit 7, 117 dwellings, $936,000, all foregoing in portion of Belfort Park.

▲**Tex., Houston**—DWELLINGS—Miles Strickland, 1508 Fannin St., plans by Dunaway & Jones, 4919 Montrose Blvd., Proj. 2, 40 dwellings, $390,000; Proj. 3, 60 dwellings, $550,000; Proj. 4, 38 masonry dwellings, $375,000, Woodlawn acres, Annex 6, south of Market St. Road.

Tex., Lubbock—CLINIC—Krueger, Hutchinson & Overton, 1301 Broadway, plans by Haynes & Kirby, 19 and Dixie Dr., 3 story, 82x252 ft., structural steel frame, brick exterior, clinic, rein.-con. pier and beam fdn., stone exterior trim, air-conditioning, 2 electric passenger elevators. $700,000.

▲ **Wis., Rhinelander**—HOSPITAL—Sisters of Sorrowful Mother, 6718 Cedarburg Rd., Milwaukee, plans by Theo. A. Hartman, Goetz Bldg., Monroe, 5 story, 46x142 ft., and 5 story over present bldg. 46x163 ft., St. Mary's Hospital addn. $1,300,000.

Alta., Calgary—Y.M.C.A. BUILDING—Y.M.C.A., Calgary, Alta., 3 story, bsmnt. Y.M.C.A. Bldg. 140x150 ft., site, 6 Ave. and 3 St. $500,000. CD 10/22/47.

▲ **Ont., Sarnia**—HOMES—A. M. Greenway, 169 Yonge St., Toronto, frame low-cost homes, Bluewater suburb. $3,000,000.

INDUSTRIAL BUILDINGS

Ala., Anniston—PLANT—Monsanto Chemical Co., 1700 S. 2 St., St. Louis, Mo., chlorine plant, $500,000.

Calif., San Francisco—SERVICE STATION—White Motor Co., 8 and Harrison Sts., truck and bus service station, Fifth and Brannan Sts. $750,000.

Ill., North Chicago—RESEARCH—Abbott Laboratories, Inc., 14 and Sheridan Rds., 4 story research bldg. $750,000. CD 11/1/49.

Ind., Marion—FACTORY—Midwest Paper Co., 11 and Adams Sts., 240x525 ft. factory with separate 2 story office structure on 10-acre tract, $750,000.

▲ **Okla., Ponca City**—PLANT, etc.—Continental Oil Co., Ponca City, lubricating oil plant, coking equip., steam turbine, boilers and refinery expansion. $7,500,000. L. F. McCollum, c/o Continental Oil Co., Oil & Gas Bldg., Houston, Tex., engr.

Pa., Morrisville—KILN and DRIER—General Refractories Co., 1520 Locust St., Phila., kiln and drier bldg. $650,000. Allied Engineering Co., 4150 E. 56 St., Cleveland, O., consult. engr. CD 3/20/51.

Tex., Beaumont—POWER UNIT—Gulf States Utilities Co., 362 Liberty St., 30,000 kw electric power unit and line, near here. Approx. $500,000. CD 11/11/48.

▲ **Tex., LaPorte**—PLANT—E. I. duPont de Nemours & Co., LaPorte, fungicides mfg. unit. $3,500,000. CD 1/29/45.

▲ **Tex., Pasadena**—PLANT—Warren Petroleum Corp., National Bank of Tulsa Bldg., Tulsa, Okla. and City Natl. Bank Bldg., Houston, gas plant and allied facilities, near here. $1,000,000.

UNCLASSIFIED

† **Del., Bethany Beach**—SUPPORTING FACILITIES—Dpt. Army, 121 N. Broad St., Phila., Pa., plans by W. Ellis Preston, 902 Jefferson St., Wilmington, tent camp supporting facilities. $805,450.

Minnesota—TELEPHONE SYSTEM—Crow Wing County Rural Telephone Co., F. Bock, pres. and J. S. Zumwalt, mgr., Brainerd, 400 mi. telephone sys., Brainerd-Little Falls area, $382,000.

Neb., Bellevue—POWER SYSTEM—City, defeated bonds municipal power sys. $450,000. Kirkham, Michaels & Assoc., 1504 Dodge St., Omaha, engrs. CD 12/19.

Neb., Sidney—ELECTRIC SYSTEM—City, electric sys. $470,000. Fulton & Cramer, 922 Trust Bldg., Lincoln, consult. engrs.

Okla., Altus—PARK LODGE—State Planning Bd., Capitol, Oklahoma City, Zone 5, plans by Wright & Selby, Hightower Bldg., Oklahoma City, Quarts Mt. State Park Lodge, near here. $400,000.

▲ **Texas, New Mexico, Arizona**—GAS LOOPING LINE—El Paso Natural Gas Co., Bassett Tower, El Paso, Tex., 122.9 mi. 30 in. gas looping line along main line from Midland to near Eunice N. M. and to vicinity Tucson, Ariz. $7,875,000. CD 7/20/50.

▲† **Washington** — SUB-STATION — Bonneville Power Admin., P. O. Box 3537 Portland, Ore., 150,000 kva sub-station, near Bellingham, $2,000,000. CD 2/5.

A Solid, DRY foundation for the Swifton Village— Cincinnati, Ohio

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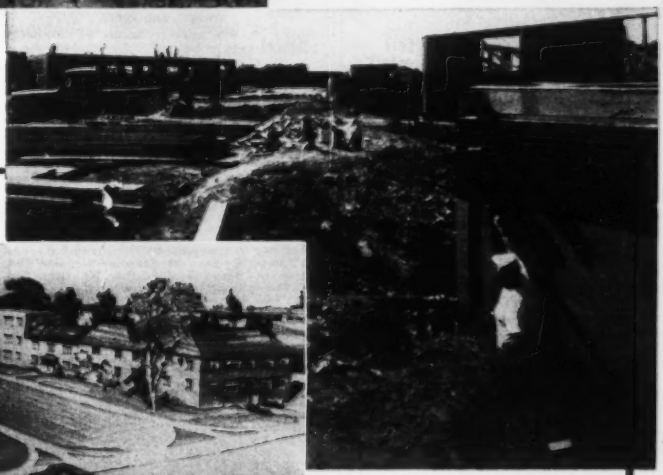

An architect's conception of a unit at Swifton Village where the $25,000,000 project will house 4,500 people.

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The Thoro System materials, used on this project, furnished by the Oakley Coal & Supply Company, through The Nurre Company, Cincinnati, Ohio.

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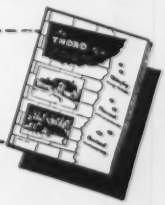

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
January 22, Massachusetts

BIDS ASKED—BUILDINGS

▲ Mass., Lawrence—HOUSING—B.A. 1/23—Lawrence Housing Auth., 55 Melvin St., fifty-two 2½ story, buildings, 208 unit housing, Proj. PHA 10-2, $2,288,000. Melvin F. Coombs, 56 Central Ave., Lynn, archt. CD 11/30.

BUILDINGS

LOW BIDS AND CONTRACTS

Richard Torry, Westmoreland Rd., Hingham, Mass. CA $558,000. 62 RESIDENCES, NORWELL, MASS. Ralph V. Bates, 188 A Hall St., Hingham, Mass. CD 1/10.

▲ Town, South Kingstown, R. I. rejected vids Oct. 30, HIGH SCHOOL, Hazard Property, SOUTH KINGSTON, R. I. LB $1,432,000. CD 11/7, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
January 29, New Jersey January 30, Delaware, New York
February 1, Pennsylvania

New Jersey—B.A. 1/21—State, Dpt. Conservation & Economic Development, Div. Water Policy & Supply, 520 E. State St., Trenton, South Bound Brook Control Structure on Delaware and Raritan Canal in Borough of South Bound Brook, Somerset Co., incl. removing timber bulkhead and original timber gate structure, sluice gates, coffer dams, pumping, etc. Plans deposit $10. CD 1/19/50.

† N. Y., Sampson—SERVICE CENTER—B.A. About 1/22—U. S. Eng., 80 Lafayette St., New York, Zone 13, airmen's service center and utilities, $750,000. Reisner & Urbahn, 654 Madison Ave., New York, Zone 21, arihts. CD 11/19.

▲† N. Y., Westhampton—DORMITORIES—B.A. About 1/23—U. S. Eng., 80 Lafayette St., New York, Zone 13, dormitories at Suffolk Air Force Base. $1,030,000. William Gehron, Weiskopf & Pickworth, 101 Park Ave., New York, Zone 17, archts. CD 9/14.

▲† Pennsylvania—B.A. About 1/23—U. S. Eng., P. O. Box 8629, City Center Bldg., 121 N. Broad St., Phila., dredging Plymouth Pool in Schuylkill River above Fairmount Dam, $500,000-$1,000,000; dredging Flat Rock Pool. $1,000,000.

N. Y., Colonie—B.A. 1/24—Town Bd., Town Hall, Newtonville, furnishing all labor, material and equip., clearing reservoir site, razing bldgs. and plowing, etc. for development of addnl. water supply from Stony Creek; installing pipe in Mohawk River Crossing supply main, addnl. water supply, both for Latham Water Dist. Plans deposit $25 each. Keis & Holroyd, 257 Broadway, Troy, consult. engrs. CD 1/18/50.

BIDS ASKED—BUILDINGS

† N. Y., Fort Jay—WAREHOUSES—B.A. About 1/22—U. S. Eng., 80 Lafayette St., New York, Zone 13, 2 permanent Warehouses. $867,000. Churchill-Fullmer Assoc., 19 W. 44 St., New York, Zone 19, archts. CD 9/14.

N. Y., New York—HOUSING IMPRVS—B.A. 1/22—New York City Housing Auth., 63 Park Rows, Zone 38, fdns. and appurtenances for Highbridge Houses, Proj. Nov. NY 5-26 in area bounded generally by Major Deegan Blvd. (Sedgwick Ave.) W. 167 St., University Ave. and line approx. 135 ft. north of W. 165 St., Bronx Boro. Plans deposit $75.

N. Y., Middletown—SCHOOL—B.A. 1/23—Bd. Educ., 159 Prospect St., school. $750,000. CD 2/27/51, under LB.

Pa., Phila.—SCHOOL—B.A. 1/24—St. Raymonds Roman Catholic Church, 8018 Michener St., school. Approx. $500,000. Gleeson & Mulrooney, Fox Bldg., archts.

† N. Y., Cold Spring—BATTERY—B.A. About 1/26—U. S. Eng., 80 Lafayette St., New York, Zone 13, bldg. for production of batteries. $866,000. Fletcher-Thompson, Inc., 211 State St., Bridgeport, Conn., engr. CD 11/15.

† N. Y., Cold Spring—BATTERY PLANT—B.A. On Or About 1/25—U. S. Eng., 80 Lafayette St., New York, Zone 13, steel, concrete battery plant, incl. sewer, water, electric utilities, and access roads. $700,000. Plans deposit $15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Brookfield Constr. Co., Inc., 521 Fifth Ave., New York 18, N. Y., CA $2,548,427, grading, paving, construct utilities, wall and grade separation, incl. bridge at Joralemon St.;

Tully & DiNapoli, Inc., 127-50 Northern Blvd., Flushing, N. Y., CA. $916,512, grading, paving, construct utilities, bridge over Flushing Ave., grade separation, recreation facilities, etc. both in Brooklyn-Queens Connecting Hy. BROOKLYN, N. Y. President Brooklyn Boro, Boro Hall, Brooklyn 2, N. Y. Bids Nov. 27. CD 10/29.

▲ Fehlhaber Pile Co., 205 E. 42 St., New York, N. Y. CA. $9,100,000, superstructure South Street elevated highway, Contr. 44A, NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. Bids Nov. 13, awarded Jan. 8. CD 10/17.

▲ Ross Electric Const. Co., 106 Fairmount Ave., Phila., Pa. CA. $1,093,487. underground conduit sys. and high voltage distr. sys., PHILA., PA. Dpt. P. Wks., City Hall Annex, Phila., Pa. CD 1/2, under LB.

▲ MARYLAND—State Rds. Comm., 108 E. Lexington St., Baltimore, Zone 2,

Dutcher Constr. Corp., Queenstown, Md. CA. $1,958,037. grading, pipe culvert installation, constr. 3 concrete culverts, surf. 3.8 mi. dual hy. on U.S. Rte. 240, Washington National Pike, Contr. M 382-2-315, Montgomery Co. CD 11/28 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ K & K Homes, Inc., c/o Norman Realty, 120-34 Queens Blvd., Kew Gardens, N. Y., Owner Builds. Approx. $2,000,000. 200 HOUSES to be called Rita Ranch Homes at Hicksville Rd. and Ontario Ave., MASSAPEQUA, N. Y.

▲ North Woodmere Park Homes, c/o Alwin Cassens, archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner Builds. Approx. $3,000,000. 150 one-family HOUSES, on 31-acre tract bounded by Brookfield, Rosedale and Hungry Harbor Rds., NORTH WOODMERE, N. Y.

B. J. Lucarelli & Co., Inc., 22 Orchard St., Jersey City, N. J., CA, $839,000, HOUSING, incl. 125 housing units. IRVINGTON, N. J. Irvington Housing Auth., 24 Union Ave., Irvington, N. J. Bids Nov. 14. CD 10/16.

▲ New Ardmore Homes, Inc., Manoa, Pa., Separate contracts. Approx. $3,000,000. RESIDENTIAL development, West Chester Pike, BROOMALL, PA.

▲ Ritter Brothers, 1511 N. Cameron St., Harrisburg, Pa., CA. $2,500,000. 2 story brick, rein.-con. newspaper PLANT, Market St. near 9th St., HARRISBURG, PA. Patriot-News Co., 11 N. 2nd St., Harrisburg, Pa., William Ginsberg Associates, 331 Madison Ave., New York 17, N. Y., consult. engrs. CD 12/7/50.

▲ Construction Service Co., 1423 Spring Garden St., Phila., Pa., Separate contracts Approx. $5,000,000. HOUSING and apartment development in Falls Twp., MORRISVILLE, PA.

▲ United Engineers & Constructors Inc., 1401 Arch St., Phila., Pa., CA. $10,000,000. Cromby Station POWER PLANT, PHOENIXVILLE, PA. Phila. Electric Co., 900 Sansom St., Phila., Pa. CD 2/27/51.

▲ Redding & Co., Inc., 26 E. 25 St., Baltimore, Md. LB $2,879,796. superstructure BUILDING extension, railroad track work and utilities, MIDDLE RIVER, MD. Glenn L. Martin Co., Middle River, Md. CD 10/5.

SOUTH

BIDS ASKED—BUILDINGS

La., Oakdale—HOUSING—B.A. 1/24—Oakdale Housing Auth., Oakdale, 70 housing units. $685,000. Plans deposit $25. Extended date. CD 12/7.

▲ Ky., Richmond—HOUSING—B.A. 1/25—Richmond Municipal Housing Comm., 134 housing units, Proj. KY 16-1, $1,400,000. Plans deposit $50. Watkins & Wilson, 180 Walnut St., Lexington, archts. Bids 12/6 rejected. CD 12/18, under LB.

Ala., Fultondale—HOUSING — B.A. 1/28 — Jefferson County Rural Housing Auth., c/o Chas. H. McCauley, archt., Jackson Bldg., Birmingham, 60 housing units, $500,000. CD 2/28/51.

Tenn., Lebanon—HOUSING—B.A. 1/23—Lebanon Housing Auth., Lebanon, 80 housing units. $500,000. CD 2/16/51.

▲ La., Shreveport—NURSING SCHOOL—B.A. 1/29—State, Div. Admin., Capitol Annex, Baton Rouge, nursing school at Confederate Memorial School, $1,200,000. Plans deposit $50. Peyton & Bosworth, Continental-American Bank Bldg., archts. CD 3/7, under LB.

▲ Miss., Natchez—SCHOOLS—B.A. 1/29—Natchez Separate School Dist., Natchez, Montebello White School, $640,000; Negro High School, $600,000, E. L. Malvaney & B. W. Martin, Millsaps Bldg., Jackson, archts. CD 5/9/51.

HEAVY CONSTRUCTION

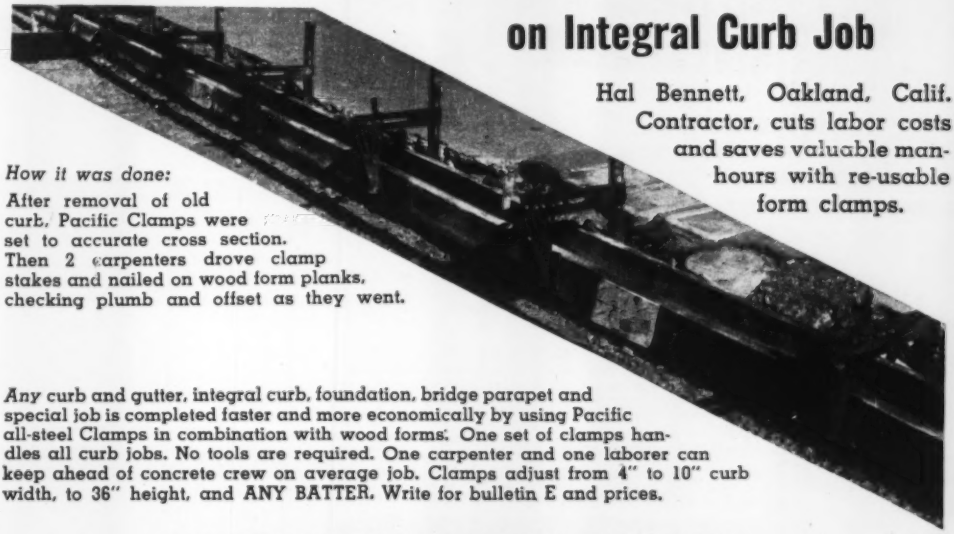
LOW BIDS AND CONTRACTS

▲† Dade Constr. Co., 725 N. W. 67 St., Miami, Fla., LB $4,488,888. 3 down range observation stations for off tore facilities, Mayaguana Island and Grand Turk Island, SAN SALVADOR. Bureau Yards & Docks Annex, Navy Dpt., Arlington, Va.

▲† Sesco Contractors, 415 S. Haskell Sts., Dallas, Tex., CA. $1,988,514, radio receiving facilities, NOY 28472, NORFOLK, VA. Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Nov. 13. CD 12/10, under LB.

(Continued on page 98)

PACIFIC All-Steel CLAMPS mean *DOUBLE* SAVINGS on Integral Curb Job



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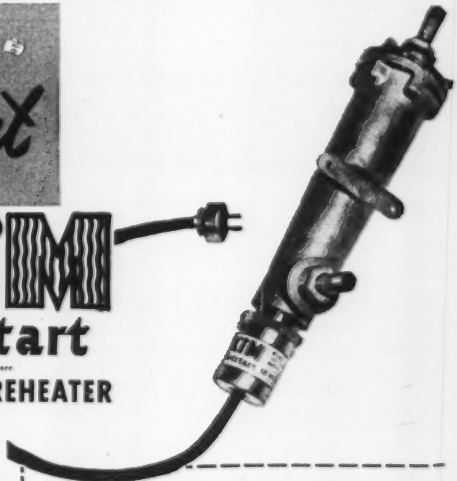

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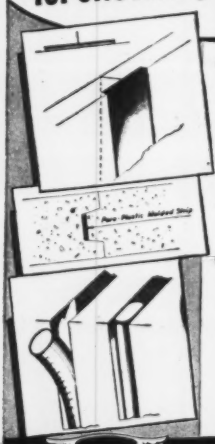

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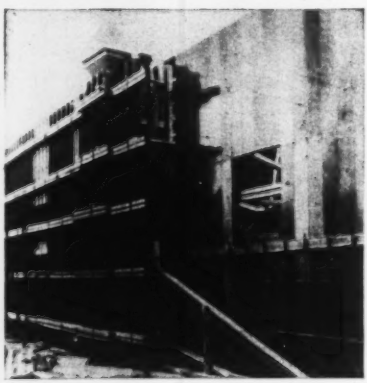

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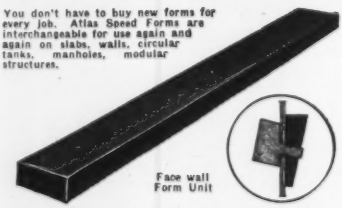

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(Continued from page 96)

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Quality Built Homes, Inc.** and **E. E. Younts, Inc.,** P. O. Box 1253, High Point, N. C., Owner Builds. Approx. $1,000,000. 101 RESIDENCES, HIGH POINT, N. C.

Burford, Hall & Smith, 140 Edgewood Ave., Atlanta, Ga., CA, $969,310, BOILER PLANT, alterations and new boiler installations, ATLANTA, GA. Bd. Regents, University System of Georgia, 20 Ivy St. S. E., Atlanta, Go. Bids Dec. 6, awarded Jan. 8. CD 12/13, under LB.

▲ **M. V. Arledge,** P. O. Box 2462, Jackson, Miss. LB. $1,175,000. mechanical system for Greenville Mills PLANT, GREENVILLE, MISS. City, Greenville, Miss. Bids Jan. 3. CD 11/27.

W. S. Corley Jr., Raleigh, Miss. Owner Builds. $750,-000. 150 HOUSING units, MISSISSIPPI CITY, MISS.

† **John C. Wile Constr. Co.,** 826 Humer Ave., Louisville, Ky. LB $605,550. ACADEMIC BLDG., paving, necessary utilities, Armored Center, Eng. 15-029-52-35, FORT KNOX, KY. U. S. Eng., 830 W. Broadway, Louisville 3, Ky. Bids Jan. 8. CD 11/27.

▲ **Algernon Blair Constr. Co.,** First National Bank Bldg., Montgomery, Ala. CA. Approx. $3,600,000. HOUSING for Atomic Energy Plant, PADUCAH, KY. Midwest Mortgage & Finance Co., 2545 S. 3 St., Louisville, Ky. Awarded Dec. 10.

▲ **G. H. McGraw Co.,** Middletown, O. CA $22,436,-000. Galvanizing PLANT, harbor and dock facilities, new COLD ROLL PROCESS BUILDING, WILDER (P. O. NEWPORT), KY. Newport Rolling Mill Div. Newport Steel Corp., 9 and Lowell Sts., Newport, Ky. CD 12/15/50.

▲ **Harmon Constr. Co.,** 100 S. Indiana St., Oklahoma City, Okla., CA. $1,174,678, 360-bed HOSPITAL addn. NASHVILLE, TENN. Davidson Co., Nashville, Tenn. Bids Dec. 20. CD 12/28, under LB.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
January 29, Indiana

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Joseph Skilken & Co.,** 44 E. Broad St., Columbus, O., CA. $4,107,921, two 200x1,000 ft. masonry, structural steel, concrete block storage WAREHOUSES; one 200x200 ft. flammable materials WAREHOUSE; one OPERATIONS BLDG., with 1,000-person CAFETERIA at Rossford Ordnance Depot, Serial No. 46-022-52-73, TOLEDO, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., Bids Dec. 7, awarded Jan. 7. CD 11/8.

▲ **American Bridge Co.,** Frick Bldg., Pittsburgh, Pa., CA. Approx. $2,000,000. install third large turbo blower in Ohio Works black furnace department; installation charge and construction of addn. to present turbo blower bldg. at PLANT, YOUNGSTOWN, O. U. S. Steel Co., E. H. Gott. gen. supt., Youngstown, O.

▲ **B-W Constr. Co.,** 39 LaSalle St., Chicago 3, Ill., CA. $4,712,000, Altgeld Gardens Extension, 67 row HOUSES incl. 500 units, CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago 5, Ill. Bids Dec. 4, awarded Dec. 31. CD 12/19, under LB.

▲ **Slavik Builders,** Garden City, Mich. CA $2,500,000. 250 HOMES, Marquette, Barton, Roseland, Sheriden and Florence Sts., GARDEN CITY, MICH. Roseland Villa Subdivision, Joseph F. Ferry, Garden City, Mich.

▲ **Barton-Malow Co,** 2631 Woodward St., Detroit, Mich. CA $5,000,000. brick, steel, concrete ASSEMBLY PLANT and ADMINISTRATION BLDG., UTICA, MICH. Packard Motor Car Co., 1580 E. Grand Blvd., Detroit, Mich. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., engr. and archt. CD 3/30/51.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Tex., Mineral Wells**—BARRACKS—B.A. 1/29—U. S. Eng., 1127 T & P Bldg., Fort Worth, 32x220 ft. permanent type airmen's barracks, Camp Wolters Air Force Base, $500,000. CD 7/16.

† **NORTH DAKOTA**—B.A. On Or About 2/1—U. S. Eng., Fort Lincoln, P.O. Box 300, Bismarck, **Mountrail and McKenzie Counties**—superstructure for highway bridge over Missouri River, Twp. 152N, Range 93W, 1 mi. south of Sanish, Serial No. CIVENG 32-015-52-26. Plans deposit $10.

BIDS ASKED—BUILDINGS

Minn., Granite Falls—SCHOOL—B.A. 1/24—Bd. Educ., A. Barber, Jr., clk., 2 story, bsmt., grade school, $500,000. Plans deposit $15. Pass & Rockey, Mankato, archts. CD 10/17.

Ark., Arkadelphia—HOUSING—B.A. 1/25—Arkadelphia Housing Auth., Arkadelphia, 76 housing units, $600,-000. Extended date. CD 11/27.

† **Colo., Boulder**—CAFETERIA, etc.—B.A. 1/25—Atomic Energy Comn., Santa Fe Operations Office, P. O. Box 5400, Albuquerque, N. M., 1,500 sq. ft. floor space cafeteria bldg. and 16,500 sq. ft. floor space

garage, rein.-con., Rocky Flats Plant, near Denver $470,000—$570,000. The Austin Co., 1300 Glenarm Pl. Denver, archt. and engr.

▲ **Minn., Lauderdale (P. O. St. Paul 8)**—SCHOOL—B.A. 1/31—Bd. Educ., Independent School Dist. 3, T. C. Schultz, clk., 1795 Eustis St., Alexander Ramsey Junior Senior High School, $1,895,140. Plans deposit $25. Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, archts. CD 11/2, under Minn., St. Paul.

▲ **Mo., St. Louis**—TELEPHONE EXCHANGE—B.A. About 2/7—Southwestern Bell Telephone Co., 1010 Pine St., Zone 1, superstructure, 3 story, bsmnt., 133x142 ft., brick, rein.-con., steel dial telephone exchange bldg., 2651 Olive St. $1,500,000. C. E. Overbeck, c/o owner, archt.

Tex., Port Arthur—PLANT—Bids Asked—Gulf Oil Corp., Gulf Bldg., Houston, sulphur-recovery plant unit. $875,000. CD 12/27.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

R. E. Mattison & Co., 100 W. Broadway-Britton, Oklahoma City, Okla. CA **$631,406.** 91 mi. rural distr. lines, DeKalb, Gentry, Worth and Nodaway Counties;

Hallett Constr. Co., Crosby, Minn. CA **$489,692.** 75 mi. rural distr. lines, Andrew, DeKalb, Gentry, Daviess, Harrison and Mercer Counties, MISSOURI. Northwest Electric Power Co-operative, Cameron, Mo. Bids Jan. 4. CD 12/14.

† **Barfield Constr. Co.,** Amarillo, Tex. LB **$843,333.** Group C, buildings, Smoky Hill Air Force Base, Inv. 52-19, SALINA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Dec. 21. CD 12/5.

▲ **O. R. Burden Constr. Co.,** 6702 E. 21 St., Tulsa, Okla. CA. Approx. **$15,000,000.** 200 mi. 24 in. oil pipe line, Cushing, OKLAHOMA to Humbolt, KANSAS; CA. Approx. **$300,000,** oil pump station 3 mi. from Cushing, Okla. Sinclair Pipe Line Co., Sinclair Bldg., Tulsa, Okla. Awarded Dec. 3. CD 1/11/51.

City, Miles City, Mont. rejected bids Dec. 10. water sys. imprvs., MILES CITY, MONT. LB Contr. W. 14 **$977,491;** Contr. W 12 with alternates **$132,200;** Contr. W 12 without alternates $132,200. CD 12/20 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Nelson Constr. Co., 1815 Des Moines St., Burlington, Ia. CA **$600,000.** girls' DORMITORY, MOUNT PLEASANT, IA. Iowa Wesleyan College, Mount Pleasant, Ia. CD 8/24.

Weitz Co., 406 Fleming Bldg., Des Moines, 9, Ia. CA, **$717,700,** general contract, County HOSPITAL, MUSCATINE, IA. Muscatine Co., Court House, Muscatine, Ia. Bids Dec. 17. CD 1/7, under LB.

▲ **St. Louis Housing Auth.,** Gerard B. Cleary, exec. dir., 901 Washington Ave., St. Louis 1, Mo. rejected bids Dec. 20, construct 1,736 dwelling units, incl. twenty 11 story, brick, rein.-con. apartments, demolition certain bldgs., Proj. Mo-1-4, ST. LOUIS, MO. LB **$20,670,000.** Will re-advertise. CD 12/27 under LB.

▲ **Winn-Senter-Rau Constr. Co.,** Railway Exchange Bldg., Kansas City 6, Mo. CA Approx. **$5,000,000.** SHOPPING and RESIDENTIAL CENTER, incl. 175 homes, 50 stores on 500,000 sq. ft., parking facilities, on 60 acre site, U. S. 50 to 67 St., and Nall to Lamar Sts., Mission Twp. near KANSAS CITY, KAN. Shopping Centre, Inc., c/o E. L. Winn, contractor. Kivett & Myers, 1016 Baltimore St., Kansas City 6, Mo., archts. Hare & Hare, 114 W. 10 St., Kansas City 6, Mo., landscape archt. Awarded Jan. 2.

▲ **Burn Engineering Co.,** 408 N. Boston St., Tulsa, Okla., CA. **$1,650,000.** crude oil distillation unit at REFINERY, DRUMRIGHT, OKLA. Tidewater Associated Oil Co., Drumright, Okla.

† **Glade Constr. Co.,** Century Bldg., Fort Worth, Tex., LB **$887,573.** 2 SHOP and WAREHOUSE bldgs. and an open concrete storage area, Inv. No. 41-443-52-6, for Fort Worth Quartermaster Depot, FORT WORTH, TEX. U. S. Eng., 1127 Tex & Pacific Bldg., Fort Worth, Tex. Bids Jan. 5.

▲ **Walsh & Burney,** 928 N. Flores St., San Antonio, Tex., CA. Approx. **$2,250,000.** superstructure;

C. L. Browning, Jr., Travis Bldg., San Antonio, Tex., CA. Approx. **$475,000** rein.-con. fdns., bsmnt. and sub-bsmnt. for 4 story, masonry MERCANTILE STORE;

Johnson Drilling & Supplies, 105 Humble St., San Antonio, Tex., CA. Approx. **$48,500,** drilling and developing water supply well, elevated storage tank, SAN ANTONIO, TEX. Josse's of Texas, Alamo Plaza, San Antonio, Tex. CD 5/28.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

January 31, California

BIDS ASKED—BUILDINGS

† **Wash., Seattle**—HOSPITAL—B.A. About 1/31—General Services Admin., P. Bldgs. Service, General Service Bldg., 19 and F. Sts. N.W., Wash. 25, D. C., extension and remodeling U. S. Public Health Service Hospital (formerly U. S. Marine Hospital) 3 story, T-shaped wing, 8,500 sq. ft. ground area and remodeling existing hospital and apartment bldg. Approx. $850,000. CD 5/21/45.

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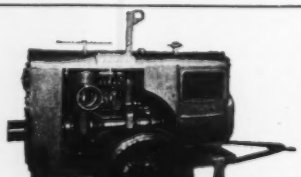

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HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

WASHINGTON—State Hy. Dpt., Olympia, Goodfellow Bros., Wenatchee, Wash., CA, $555,531, imprv. 2.9 mi. Highways 2 and 10, Monitor to Wenatchee, Chelan Co. Bids Jan. 4. CD 1/8, under LB.

† Stolte, Inc., 8451 San Leandro St., Oakland, Calif., LB, Sch. A, $619,007; Sch. B, $562,842; Sch. C, $454,310; Sch. D, $597,850, additional facilities at Sacramento Beam Station, ENG 04-167-52-5, Spec. 1851, SACRAMENTO, CALIF. U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Jan. 4.

† McGillivray Constr. Co., P. O. Box 873, Sacramento, Calif., CA, $728,368, addnl. parking aprons at Mather Air Force Base, No. 1607, SACRAMENTO, CALIF., U. S. Eng., Wright Bldg., Sacramento, Calif. Bids Dec. 6, awarded Jan. 3. CD 12/13, under LB.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ Ford J. Twaits Co., 449 S. Beaudry St., Los Angeles, Calif. CA Approx. $2,000,000. 1 story FACTORY, 2 story OFFICE wing, EL MONTE, CALIF. Hoffman Radio Corp., 3761 S. Hill St., Los Angeles, Calif. Pereira & Luckman, 7421 Beverly Blvd., Los Angeles, Calif., engrs.

Willis & Willis, 5250 Blackstone St., Fresno, Calif., CA, $989,946, low-rent HOUSING Project CAL 26-3 MODESTO, CALIF. Public Housing Auth. of Stanislaus Co., 829 13 St., Modesto, Calif. Bids Dec. 20, awarded Jan. 4. CD 12/31, under LB.

ALASKA

BIDS ASKED—BUILDINGS

▲† Alaska, Kenai—COMMUNICATIONS STATION—B.A. 1/29—U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, army communications station, Inv. 52-15. Approx. $4,000,000. Plans deposit $25. CD 12/27, under LB.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

† Pacific Oerlikon Co., Tideflats, Tacoma, Wash., CA, $639,004, generators for Eklutna hydro-electric development, Spec. DC 3536, ALASKA. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., Bids Oct. 25, CD 12/18, under LB.

CANADA

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

Bird Constr. Co., Ltd., 24 Dominion Bank Bldg., Regina, Sask., CA, Approx. $500,000. hangar type test shed, SUFFIELD, ALTA. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. Bids Nov. 27. CD 11/14.

BUILDINGS
LOW BIDS AND CONTRACTS

O'Dell Constr. Co., 7 Rockwood Ave., Fredericton, N. B., Owner Builds, $650,000, 80 DWELLINGS, FREDERICTON, N. B.

M. Sullivan & Son Ltd., 234 Elgin St., Arnprior, Ont., CA, $530,000, 2 story, St. Laurence High SCHOOL, CORNWALL, ONT. Suburban Cornwall High School Area, F. Lepage, secy., Cornwall, Ont. Bids Dec. 28. CD 12/20.

▲ Ontario Paper Co. Ltd., Allanburg Rd., Thorold, Ont., Own Forces. $1,300,000, vanillin PLANT, THOROLD, ONT.

J. R. Loyer, 8605 St. Denis St., Montreal, Que., Own Forces, $500,000, four 3 story, bsmnt., 14 suites each, APARTMENTS, Randall Ave., near Cote St. Luc Rd., MONTREAL, QUE.

S. D. Miller & Sons, 6999 Cote des Neiges Rd., Montreal, Que., Owner Builds, $800,000, 125 DWELLINGS, MONTREAL, QUE.

Ross & Anglin Ltd., 4400 W. Ste. Catherine St., Montreal, Que., CA, $750,000, 1 story, 202x420 ft. reinf.-con., structural steel brick PLANT addn., MONTREAL, QUE. Canadian Tube & Steel Products Ltd., 5675 Hamilton St., Montreal, Que. Luke & Little, 1515 Crescent St., Montreal, Que., archts. CD 3/12.

OFFICIAL PROPOSALS

***RATE:** THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.25 PER LINE (OR FRACTION) PER INSERTION.*
***CLOSING DATE:** FRIDAY 10:30 A. M. FOR THE ISSUE DATED THE FOLLOWING THURSDAY.*
***SEND COPY TO:** OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 36, N. Y.*

Bids: January 30, 1952

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on JANUARY 30, 1952 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		L. KETCHUM, District Engr., 109 No. Genesee St., Utica, N. Y.				
		DISTRICT No. 3				
		WILLIAM ROBINSON, District Engr., Weigh Lock Bldg., Syracuse 1, N. Y.				
9 Counties 4 Cities	FARC 52-12 FARC 52-13	Installation of Automatic ..... Recording Traffic Counters in Dist. 2 & 3 Proj. SWHP 1/8)		Installation of 20 Aut. Recording Traffic Counters	$2,200 Plans $15	$39,600
		DISTRICT No. 3				
		WILLIAM ROBINSON, District Engr., Weigh Lock Bldg., Syracuse 1, N. Y.				
Cayuga	FARC 52-7	Montezuma-Cayuga-Union Springs Pt. 1, S. H. 8518 Proj. F-1059(1)	2.71 Mi.	10" Unreinf. Cem. Conc. Pavt. 24'-36' Wide	$16,000 Plans $10	$316,000
Onondaga	FARC 52-8	Syracuse-Lafayette, S.H. 5365 Proj. FI-UI-397(3)	2.13 Mi.	Asph. Conc. Type 2A	$45,000 Plans $10	$752,000
		DISTRICT No. 4				
		A. R. MULLIGAN, District Engr., Barge Canal Terminal, Rochester 1, N. Y.				
Genesee	OT 52-2 RC 52-16 ST 52-2	N. Y. State Thwy., Ontario Sect. Sub. 5B & 6A Stafford–South Byron–Byron Pt. 1 S. H. 1865 Leroy–Brockport Pt. 3 SH 1780 West Bergen Rd. C. R. 31 North Road C. R. 40	11.47 Mi.	9" Cem. Conc. Pavt. 2 @ 25' Wide = 9.81 Mi. Asph. Conc. Ty. 1A Opt. = 1.32 Mi. Misc. Work = 0.34 Mi.	$250,000 Plans $50	$4,169,000
		DISTRICT No. 6				
		H. F. BRUMM, District Engr., State Office Bldg., Hornell, N. Y.				
Schuyler	FARC 52-10	Watkins-Lodi Pts. 1, 2 & 3, S. H. 8110-8035 Proj. F-626(3)	7.08 Mi.	Asph. Conc. Ty. 1A, Opt.	$35,000 Plans $15	$615,000
		DISTRICT No. 7				
		ROY F. HALL, District Engr., 444 Van Duzee St., Watertown, N. Y.				
4 Counties 1 City	FARC 52-14	Installation of Automatic ..... Recording Traffic Counters in District 7 Proj. SWHP 1–(8)		Installation of 8 Aut. Recording Traffic Counters	$800 Plans $10	$14,560
		DISTRICT No. 8				
		J. S. BURNT, District Engr., Pleasant Valley Road, Poughkeepsie, N. Y.				
Columbia & Dutchess	FARC 52-6	Hilldale-Copake Iron Works S. H. 5347 Copake Iron Works-Copake S. H. 5645 Copake-Mt. Riga Pts. 1 & 2 S. H. 8009 Millerton-County Line S. H. 709, Proj. F-350(20)	7.83 Mi.	10" Unreinf. Cem. Conc. Pavt. 24' Wide	$90,000 Plans $25	$1,735,000
Dutchess	RC 52-11	Barrytown-Red Hook-Rock City S. H. 1312	0.40 Mi.	Storm Sewer	$1,500 Plans $10	$27,000
Dutchess	RC 52-9	Hopewell Junction S. H. 8229	0.15 Mi.	Asph. Conc. Ty. 1A Opt.	$1,000 Plans $10	$17,000
Orange	RC 52-2	Tuxedo-Hartiman Pt. 1 S. H. 8258	0.83 Mi.	9" Unreinf. Cem. Conc. Pavt. (Widen.)	$7,900 Plans $10	$143,000
Rockland	HT 52-1	N. Y. State Thruway-Hudson Sect.–(Tappan Zee Bridge)	1.46 Mi.	Rein. Conc. Rig. Frame Bents & Miscell. Work	$350,000 Plans $10	$6,211,000
		DISTRICT No. 10				
		J. J. DARCY, District Engr., Montauk Highway at Little East Neck Rd., Babylon, Long Island, N. Y.				
Bronx	FAMDE 52-1	Major Deegan Expressway Ext. Contract 3A Proj. U-1082(9)	0.36 Mi. (Access 0.30)	Grading Expy. = 0.36 Mi. (Grad. & Misc. Work Access = 0.30 Mi.) Hy. Sep. 2 Sp. Plate Girder 121' & 123' Hy. Sep. Plate Girder 94' Sp., Hy. Sep. Rigid Frame 30' Sp.	$155,000 Plans $50	$2,815,000
Bronx	FAMDE 52-2	Major Deegan Expressway Ext. Contract 2A, Pkwy. Conn. Proj. U689(19)	1.67 Mi.	9" Unreinf. Cem. Conc. Pavt. 2 @ 24' Wide = 1.41 Mi. Misc. Work = 0.26 Mi. Ped. Underpass 36'-8" Rigid Frame Hy. Sep. 2 Sp. Conc. Arch 53'-11" & 30'-7½"	$115,000 Plans $50	$1,956,000
Suffolk	FASS 52-2	Nesconset-Port Jefferson Station C. R. 80	7.64 (1.92 Int. Rds.)	Asp. Conc. on Bit. Base = 7.54 Mi. Cem. Conc. Pavt. = 0.10 Mi. (Int. Rds. Asp. Conc. = 1.06 Mi.) (Int. Rds Cem. Conc. Pavt, = 0.30 Mi.) (Int. Rds. Asp. Tr. Earth = 0.53 Mi.)	$77,000 Plans $25	$1,408,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

R. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: February 5, 1952

Chlorinating Equipment

CONTRACT 329

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, February 5, 1952, for Contract 329, for furnishing, delivering, installing and testing chlorinating equipment for the Roudout, West Branch and Kensico South effluent chambers of the Delaware aqueduct, all as set forth in the specifications. The locations of the proposed work are in the Towns of Wawarsing, Ulster county, Carmel, Putnam county and Mount Pleasant, Westchester county, New York.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of twenty thousand dollars ($20,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may do same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (specifications No. DC-3633) will be received at Kirwin, Kansas, until January 31, 1952, for furnishing labor and materials for: Foundation construction for Kirwin Dam. Location: Kirwin, Kansas. Principal items are: Excavation 2,150,000 cu. yds.; embankment, 1,396,000 cu. yds.; and other work. Completion time 300 days. For particulars, address Bureau of Reclamation, Kirwin, Kansas; or Building 53, Denver Federal Center, Denver, Colorado.

(Continued on following page)

Read the Official Proposal Columns of ENGINEERING NEWS-RECORD This Week and Every Week

OFFICIAL PROPOSALS

Bids: January 29, 1952

Landscape Improvement Rt. 25, Sec. 32-F

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Landscape Improvement on Route 25, Section 32-F, from vicinity of Port Street South to Haynes Avenue, City of Newark, Essex County. Length 1.502 miles.

Estimated: 152 Trees—Deciduous
18 Trees—Evergreen
327 Trees—Small & Flowering
3,979 Shrubs
319 Vines & Ground Covers
950 cu. yds. Topsoil

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 29, 1952, at eleven o'clock, (11:00 A.M.-EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: January 29, 1952

New Jersey Road Work

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

PITTSTOWN-EVERITTSTOWN ROAD, SECTION 2

Construction of Pittstown-Everittstown Road, Section 2, from Neilson's Corner to Everittstown, including one bridge, in Alexandria Township, Hunterdon County, Federal Aid Secondary Project No. S-128(2). Length 1.312 miles.

Roadway Items

Estimated:
17,963 cu. yds. Roadway Excavation, Unclassified
3,600 cu. yds. Subbase
22,300 sq. yds. Macadam Base Course, 4" Compacted
22,300 sq. yds. Modified Penetration Macadam, 3" Thick
46,830 gal. Bituminous Material
1,500 tons Bituminous Concrete, Type "A" or "T"
1,351 lin. ft. Drainage

Bridge Items

357 cu. yds. Concrete
9,150 lbs. Reinforcing Steel
140 lin. ft. Sectional Plate Pipe Arch

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 29, 1952, at eleven o'clock, 11:00 A.M.-EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements, and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Municipal Building, South Main Street, Phillipsburg, New Jersey. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00, and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: January 29, 1952

Hackensack River Bridge, Route 25, (Substructure)

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Construction of the Substructure for a bridge over Hackensack River on State Highway Route 25, between Jersey City and Kearny, Hudson County, Federal Aid Project No. U 192(1). The principal items of construction are:

Estimated:
74,620 lin. ft. Untreated Timber Piles
10,157 lin. ft. Cast in Place Concrete Piles, Steel Bearing Piles or Concrete Filled Pipe Piles
20,300 lin. ft. 14" Steel Bearing Piles
21,853 cu. yds. Concrete
716 cu. yds. Granite Protection
847,224 lbs. Reinforcement Steel in Structures
87 M.B.M. Timber Structures
17,160 lin. ft. Treated Timber Piles in Fenders
25,280 lbs. Structural Steel

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 29, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by P. L. 769, 81st Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 2855 Boulevard, Jersey City, N. J., and 309 Washington Street, Newark, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all common labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: February 5, 1952

Electric Substations and Transformers

CONTRACT 414

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A. M., Eastern Standard Time, on Tuesday, February 5, 1952, for Contract 414, for furnishing, testing and delivering two 150-Kva. indoor unit substations and two 45-Kva. indoor and three 15-Kva. outdoor transformers for the Neversink and East Delaware intake chambers and the Downsville release water chamber of the Delaware aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of two thousand dollars ($2,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawing, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

(Continued on opposite page)

OFFICIAL PROPOSALS

(Continued from opposite page)

Bids: January 29, 1952

Landscape Improvement, Palisades Interstate Parkway, New Jersey Sections 2F & 1D

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Landscape Improvement on Palisades Interstate Parkway, New Jersey Sections 2F &1D, from Station 166+00, South of Clinton Avenue to Station 320+05, South of Hillside Avenue, Planting, Boroughs of Englewood Cliffs, Tenafly and Alpine, Bergen County. Length 2.918 miles.

Estimated: 169 Trees—Deciduous
521 Trees—Evergreen
1,025 Trees—Small and Flowering
6,646 Shrubs
782 Vine and Ground Covers
1,450 Cu. yds. Topsoil

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, January 29, 1952, at eleven o'clock (11:00 A.M.-EASTERN STANDARD TIME), and will be opened and real immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3632) will be received by Bureau of Reclamation, Coachella, California, until February 7, 1952, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, pipe lines, and structures for laterals 97.0, 98.0, 99.4, and 99.8-0.51, and sublaterals, part 2 of unit 9, Coachella Valley Distribution System, All-American Canal System, Boulder Canyon Project, Arizona-California-Nevada. The work is situated in the vicinity of Mecca, California. Principal items are approximately: Furnishing and laying precast-concrete pipe for approximately 50 miles of pipe lines; 1,170 cu. yds. concrete; installing gates, valves, and metalwork; and other work. Time allowed for completion will be 380 days. For particulars, address Bureau of Reclamation, Coachella, California; or Building 53, Denver Federal Center, Denver, Colorado.

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

CIVIL ENGINEER with a minimum of 3—5 years experience in the design of sanitary sewers. Must be thoroughly competent to take over the complete design of a sewer system for a population of 60,000 in all details. Work is located at Morrisville, Pennsylvania. Phone Manhasset 7-0777, C. A. Monroe, 1900 Northern Boulevard, Manhasset, New York.

ELECTRICAL ENGINEER—Position open in Eastern United States for young man with actual experience in distribution and electrical maintenance work. Take off and estimating experience helpful. Excellent opportunity for advancement. This position is permanent. Send experience record, education and reference with application. Salary open. P-2885, Engineering News-Record.

ENGINEER—DRAFTSMAN: Wanted by large railroad, college graduate in Mechanical Engineering, to handle mechanical features required in connection with design of modern buildings and shop facilities. Experience desirable. Write P-2962, Engineering News-Record.

ENGINEER EXPERIENCED in general municipal work including construction of water and sewer lines, pavements, and drainage facilities, maintenance of streets, public grounds and buildings, to supervise operation of engineering and service departments of rapidly growing residential community in Metropolitan Cleveland. Good pay with opportunity for increase. Submit full resume, stating experience, education, age, availability and salary expected. P-2746, Engineering-News-Record.

ENGINEER, EXPERIENCED, first class, civil or mechanical, for either office or field work. Write P. O. Box 1106, Roanoke, Va.

ENGINEER SUPERVISOR—Wanted for home office of general construction company. Must be completely familiar with estimating, bidding and cost analysis on both heavy construction and building. Only applicants with proven, broad experience will be considered. Applicant must have had previous experience in the field as project manager or project superintendent. Salary open. Send complete resume. P-2884, Engineering News-Record.

ENGINEER WANTED. Permanent position with highway construction firm in Westchester County. Must have experience to take charge of field engineering on highway construction projects. Also be able to do estimating in main office. The present projects are located in the New Jersey and New York areas. Write full qualifications, salary, experience, etc. P-2888, Engineering News-Record.

ESTIMATOR—Ten years experience in public works for general contractor in N.Y.C. BR 9-8996 or write P-2918, Engineering News-Record.

HELP WANTED, Male. City Engineer (registered) for the City of Merced. A qualified man will be hired now as Assistant City Engineer to replace the present City Engineer soon to retire. Salary commensurate with qualifications. Write City Manager, City Hall, Merced, California.

MATERIALS ENGINEER—C.E. experienced in highway materials, permanent, good salary and opportunity. Give full information. P-2943, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checkers. All types of structures. Vacation, group insurance, good working conditions. Only top quality men. Send complete written information. Bristol Steel & Iron Works, Inc., Bristol, Virginia-Tennessee.

SUPERINTENDENT: MUST be experienced in estimating, negotiating field and especially supervise "Gunniting", Pressure Grouting, Concrete and Masonry Restoration. Also New Construction for Railroads, Utilities and Industrial Plants. State age and experience. Salary open. P-2978, Engineering News-Record.

WANTED IMMEDIATELY Superintendent thoroughly experienced to supervise on large canal and levee project in Southeast. Must be good organizer, producer, know men and equipment. Write stating qualifications. P-2925, Engineering News-Record.

(Continued on page 104)

SALES ENGINEER

For employment with a large mid-western plant specializing in the fabrication of steel, steel alloys, and aluminum products in connection with process plants and other equipment for the gas, petroleum and chemical industries. Must be capable of assisting in the administration of sales activities involving promotional sales work, customer contacts, selling, preparation of production orders and general coordination of distribution policies with sales manager. Man with chemical engineering background preferred between the age of 35/45 who has customer contacts in the fabricating and processing field and who has the sales qualifications for dealing with people and coordinating the efforts of a sales organization. This position offers possible advancement to general sales manager.

Write giving background, personal data, and salary requirement—

SW-2939, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS

Major Petroleum Refinery Construction Company located in New York City desires to add to its expanding staff. If you can qualify for one of the jobs listed below and are interested in a challenging opportunity please submit your resume in detail and past earnings record to the box number below. Our employees know of this ad.

SCHEDULING ENGINEER experienced in job scheduling preferably on petroleum or chemical plants starting with the engineering and proceeding through procurement and construction.

CONSTRUCTION SUPERINTENDENT must have experience in construction of oil refineries and the exercise of executive authority at job site. Must be able to travel.

ASSISTANT TO CONSTRUCTION AND PROCUREMENT SUPERVISOR requires supervisory field erection experience on oil refineries and chemical plants as well as some experience in procurement, expediting and inspection of refinery equipment. Headquarters in New York City with some travel required.

P-2957, Engineering News-Record
330 W. 42 Street, New York, N. Y.

PIPING & MECHANICAL SUPERINTENDENTS

Installing mechanical equipment and piping for Water and Sewage Plants. Equivalent experience acceptable.

Our expanding growth offers excellent opportunities in a field that has permanence and stability.

MUNICIPAL SERVICE COMPANY
908 GRAND AVENUE
KANSAS CITY, MISSOURI

ARCHITECTURAL AND ENGINEERING SALES

International Manufacturer of building materials for commercial and industrial construction. Permanent opportunity. Salary, bonus, profit sharing. Architectural . . . Engineering . . . Construction education and experience necessary. Age 25-35.

Write Box P-2986, Engineering News-Record
330 W 42nd St., New York 36, N. Y.

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.25 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by January 21st at the New York City Office, 330 W. 42nd St., N. Y. 36, will appear in January 31st issue subject to space available

---

ENGINEERS
DESIGNERS & DRAFTSMEN

Electrical, Mechanical
Structural & Hydraulic

Reinforced Concrete
Designers & Detailers

FOR WORK ON

Industrial Plants
Paper & Textile Mills
Water Supply & Waste Disposal
Steam & Hydroelectric Power Plants
Electrical Transmission & Distribution

CHAS. T. MAIN, Inc.
80 Federal Street **Boston 10, Mass.**

Permanent Positions Open to
ENGINEERS

. . . after training at full-time pay . . . as
Consultants in
Fire Protection Engineering
to top U. S. and Canadian industry. Usual pension and other benefits. Excellent opportunities; fast-growing engineering organization.

Write complete qualifications to:
P-2807, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

STONE MASON FOREMAN
For setting 70,000 cu. ft. of Queenstone Limestone on 8 story Building in Ottawa. Apply giving previous experience to
ANGUS ROBERTSON LIMITED
5035 Western Ave. Montreal, Que.

ELECTRICAL ENGINEER
As Assistant Superintendent for Midwest Municipal electric and water utility. Experience in design, planning, and operation of 2400/4160 volt distribution systems. Knowledge and experience in steam generating plants desirable. Age 32-40 years.
P-2880, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

WANTED FOR
CHEMICAL PLANT LOCATED IN SOUTH
ESTIMATORS
Must be experienced engineers, under 45, familiar with Refinery and Chemical Plant design and capable of estimating process equipment installations from flow diagrams and specifications. Give full information, experience record and salary expected in first letter. All replies confidential.
P-2907, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

CIVIL ENGINEER
with a minimum of 3-5 years experience in the design of sanitary sewers. Must be thoroughly competent to take over the complete design of a sewer system for a population of 60,000 in all details. Work is located at Morrisville, Pennsylvania.
Phone Manhasset 7-0777
C. A. MONROE
1900 Northern Boulevard, Manhasset, N. Y.

When
Answering
BOX NUMBERS...
to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

ENGINEERS
for design and construction of several major municipal projects. Starting Salaries: $3707, $4514, $5334, $6143, $7036 per year. Write
DETROIT CIVIL SERVICE COMMISSION
735 Randolph St. Detroit 26, Mich.

SALARIED POSITIONS $3,500—$35,000
We offer the original personal employment service (established 42 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N. Y.

(Continued from page 103)

SELLING OPPORTUNITY OFFERED

SALES ENGINEER for large concern in construction field. Must have degree in civil engineering. Prefer person having experience in contracting engineers and contractors. Desire resident of Kentucky, as position is located in Louisville. RW-2740, Engineering News-Record.

EMPLOYMENT SERVICE

ENGINEERS NEEDED in all fields at all levels. Salaries commensurate with experience & ability. Highly confidential service. Bring or mail 3 resumes to: Position Securing Bureau Inc. (Agency), 45 John St., N. Y. 38, N. Y.

POSITIONS WANTED

CHIEF STRUCTURAL Engineer, graduate C.E. registered with National Bureau, over 25 years experience in design and construction of industrial buildings, bridges, hydro-electric developments, heavy engineering structures; field and office supervision. 10 years foreign service. Knows languages. Desires permanent connection with growing concern. PW-2844, Engineering News-Record.

CIVIL ENGINEER: Consulting, Registered; 20 years experience—Sewerage systems, Water supply, Town Planning, Municipal Engineering Projects. Emphasis on connection of responsibility or future partnership possibility. PW-2870, Engineering News-Record.

CIVIL ENGINEER—graduate, age 25, married, now employed. 4 years heavy construction experience, both field and office. Want Latin American job in construction or mining. Not afraid of long hours and hard work. PW-2967, Engineering News-Record.

CIVIL ENGINEER—Graduate, Registered in Ohio, age 48, 22 years field and office experience in highway, railroad, water, sewer, and general building construction. Presently employed in Responsible position, desires change. PW-2953, Engineering News-Record.

CONSTRUCTION EXECUTIVE: 46, New York Registration, with wide experience in planning, coordinating and directing the development and construction of industrials, public works and transportation facilities as Chief Engineer-Estimator and Contract-Construction Manager, is interested in a career job offering economic security. PW-2871, Engineering News-Record.

CONSTRUCTION MANAGER available Engineering education, have numerable contacts and broad experience in both domestic and foreign construction. Wishes permanent connections with responsible construction company who realize the importance of know-how and dependability. Age 45. PW-2866, Engineering News-Record.

CONSTRUCTION SUPERINT. 4 years exper. Heavy constr'n indust. public, pvt. works. Grad. Eng. Travel. PW-3005, Engineering News-Record.

(Continued on opposite page)

POSITIONS WANTED

(Continued on opposite page)

CONSTRUCTION OR Projects Manager available February 1st, with years of diversified experience in all phases of heavy construction. Successful record contact negotiations. Familiar with CPFF and overseas contracts. If necessary can furnish well trained key personnel for both office and field. References furnished. PW-2926, Engineering News-Record.

FIELD OFFICE Manager seeking new connection. Experienced in office administration purchasing, accounting, cost keeping and payrolls with large road construction firm. Free to travel and will go anywhere. Good salary and steady employment desired. Best references furnished. PW-2987, Engineering News-Record.

GROUND-WATER Geologist, M.S., 28, 4 years applied research in ground-water developments, experienced in surface and down-the-hole geophysical methods, instrument fabrication, well design and well yield improvement. Publications. Prefer position with engineering firm. PW-2946, Engineering News-Record.

OFFICE MANAGER, Accountant Auditor—Now employed desires permanency — 17 years diversified experience in heavy, industrial, refinery and housing construction. All phases of accounting, payroll and timekeeping. PW-2966, Engineering News-Record.

PROJECT MANAGER or Construction Superintendent. 20 years experience in Industrial and Governmental work. Excellent references. PW-2823, Engineering News-Record.

SUCCESSFUL TOP Monumental building and heavy construction man presently in charge of all work for internationally known long established construction company desires immediate change. PW-2585, Engineering News-Record.

SUPT. TUNNELS, Open cut and extensive experience with Hard Rock. PW-2863, Engineering News-Record.

SUPERINTENDENT: 30 years experience industrial, power, dams, steel, cement mills, schools and hospitals. Frame cantonements. Cost conscious. Available Jan. 1st. PW-2934, Engineering News-Record.

SUPERINTENDENT 25 years construction experience, bridges, dams, disposal plants, pumping stations, concrete structures, sewer and water systems, heavy excavation rock and soil, waterfront work, etc. Good organizer, know men and equipment, familiar with labor and material costs and distribution. Available immediately, any location. PW-2991, Engineering News-Record.

SELLING OPPORTUNITY WANTED

SALES REPRESENTATIVE Available for St. Louis district. Construction, Building, Industrial Equipment, Tools. Experienced salesman and organizer. RA-2952, Engineering News-Record.

WORK WANTED

SMALL GROUP—mechanical engineer; designer; draftsman available in Florida. Experienced on design, specification writing, supervision, estimating; plumbing, heating, ventilating, sewers, Power plants, process piping, air conditioning for hospitals, hotels, industrial bldg. Housing, army and navy projects. WW-2968, Engineering News-Record.

SPECIAL SERVICE

Divers, equipped and experienced for all underwater operations—Demolition our specialty. McAlinden Construction Co., Hopewell, New Jersey.

PATENT ATTORNEY

CONSULT: Z. H. POLACHEK
Reg. Patent Attorney, 1234 Broadway, New York 1, N. Y.

ENGINEERING PLANNER & THINKER

Available now—a director of big engineering, construction, and production projects. Excellent executive engineering experience—domestic and foreign. Wire for interview.

PW-2941, Engineering News-Record
330 W. 42 Street, New York, N. Y.

AVAILABLE

Services of Architectural Firm practicing in San Francisco for 25 years. Available for correspondent or resident representative for private firms having Defense Building Contracts on West Coast. Office experienced in Public building and Government paper work. Professional record and references on request.

RA-2982, Engineering News-Record
68 Post St., San Francisco 4, Calif.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-first year. Write today.*

WILSON *Engineering Corp.*

College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

HERE IT IS—A MUST BOOK

For Persons Engaged in Directing or Supervising Building Construction

By H. G. Richey
District Engineer (Retired)
Construction U. S. Public Buildings

A REFERENCE HANDBOOK FOR CONSTRUCTION ENGINEERS ARCHITECTS, BUILDERS, SUPERINTENDENTS OF CONSTRUCTION & BUILDING CONSTRUCTION FOREMEN

1640 Pages 4½x7", 544 Illustrations

PRICE $10.00

ADDRESS H. G. RICHEY
1328 North Rendon St., New Orleans, La.
(Table of Contents Sent on Request)

FOR SALE

CIVIL ENGINEERING and SURVEYING BUSINESS

Located in Chicago and grossing between $70,000 and $80,000 per year. Will pay three principals $10,000 annual income per person. $30,000 in records and field and office equipment. Asking $80,000. Terms can be arranged.

BO-2865, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

FOR SALE

COMPLETE DREDGE OUTFIT

2—14" Dredges
3 Tenders
Tug—Derrick—Fuel Barge.

ATLANTIC DREDGING & CONSTRUCTION CO.
Satsuma, Florida

WANTED

WANTED

SLOPE HOIST

SINGLE CYLINDER

For Mine Slope

Capable of minimum 10,000 lbs. pull.

Give full details.

MATERIAL SERVICE CORPORATION
33 N. LaSalle Street
Chicago 2, Illinois

WANTED

- 2 heavy stiffleg or guy derricks, steel or wood, for clamshell work.
- 1 stationary concrete mixer, 1-yard capacity.
- 1 set batching bins for concrete mixer.
- Orange peel, stone grabs and clamshell buckets.
- Steel skips or scale pans.
- Wire rope blasting mats.

W-2822, Engineering News-Record
330 W. 42 Street, New York, N. Y.

WANTED

STEAM ROAD ROLLER STEAM FIRE ENGINE

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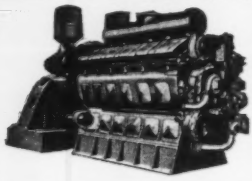

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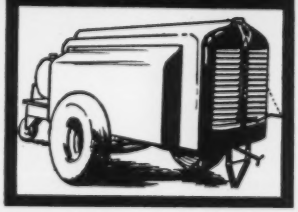

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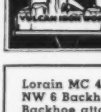

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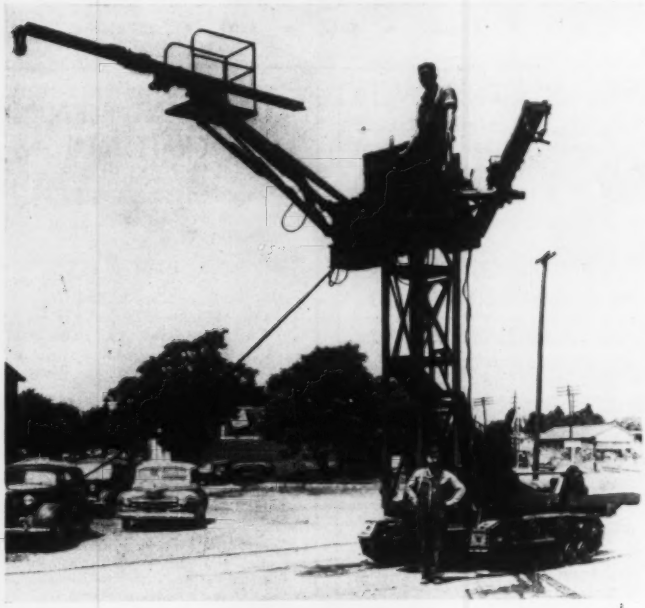
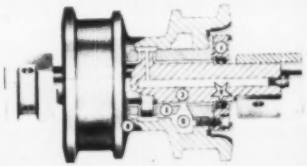


Self-leveling platforms on electric jumbo

Pictured here is one of two jumbos about to begin work in an underground iron mine in Missouri. Each of the jumbos has two hydraulic jib arms with self-leveling operator's platforms, independently-driven tracks, a mast platform with adjustable height and electric drive motors. The mast can fold to allow the jumbo to enter a 15-ft entryway. Other models available include stationary masts, pivoted booms, jib arms mounted directly on the crawler chassis, and with air or diesel-engine drive. They can be used for drilling, powder loading, scaling, roof bolting, and timbering operations. All these models can be easily disassembled for entrance into mine shafts. ROGERS IRON WORKS COMPANY, JOPLIN, MISSOURI.



Interchangeable track rollers exclude dirt

"Flow-Away" sealing is the secret of a new interchangeable track roller which permits a small amount of grease to pass outward through the seals, and at the same time excludes all dirt, grit or abrasive matter from the roller. The use of mounting blocks instead of conventional end collars provides sufficient clearance space between the blocks and the seal housing to allow grease to flow outward.

The Carroll one-piece roller shell is made in a uniform-section manganese alloy steel casting, heat-treated to insure the right degree of hardness for long performance-life, according to the manufacturer. An important feature is that the roller shell, shaft and bearings are exactly the same dimensions as other rollers now on the market. Outstanding features shown in the photo above include (A) dirt-exclusion seal, (B) one-piece shell, (B) center thrust type shaft, (D) grease reservoirs (five times capacity of conventional rollers) (E) bronze bushings, and (F) seal housing. CRAIG CARROLL COMPANY, PORTLAND, OREGON.

New copper expansion and contraction joint

A new 18-oz copper joint to provide for the expansion and contraction of copper flashings at the base of parapet and main building walls appeared on the market recently. It permits the use of a prefabricated copper expansion joint where far less durable and more costly methods have been previously employed.

The new base flashing expansion joint shown here is formed at an angle to fit exactly the standard dimensions of copper base flashing. It has a 4-in. horizontal leg and a 12-in. vertical member. Open seams on the edges of the joint permit fast, easy interlocking and soldering of adjoining lengths of base flashing.

Running down the full length of the member is a half-circle approximately 1 in. in diameter. This permits movement of base flashing due to temperature variations without any buckling or cracking. The joints should be placed at a maximum of 24 ft from each other along the base flashing.

Either plain or ribbed copper cap flashing can be used with the Chase base flashing expansion joint. A prefabricated cap box is also furnished with each expansion joint for attaching to the cap flashing as a protective cover for the half circle in the expansion joint. This cap box is shown in the workman's hand at left. CHASE BRASS & COPPER COMPANY, WATERBURY 20, CONNECTICUT.

(*Continued on page 115*)

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Wood treated with PENTA effectively resists decay and termites—actually lasts *many times longer* than untreated wood! PENTA also leaves wood clean, easy to handle, and paintable when properly treated. PENTA will not leach.

PENTA gives effective, dependable service on any all-weather installations—sign posts, billboards or utility poles. For more information on how PENTA can help you "build for tomorrow", write to Dow, Dept. PE-79.

*PENTA is a popular abbreviation of the chemical, PENTAchlorophenol.

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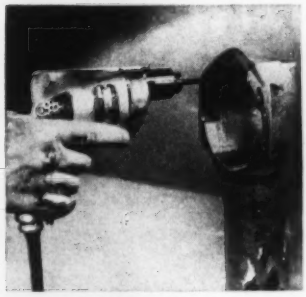
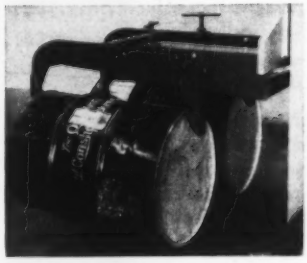


New ¼-inch drill

Among the outstanding features of this new model Holgun drill are full-sized ball bearings, heat-treated gears, splined gear shafts and smooth-contour aluminum housings. The standard on this new model is a no-load speed of 1700 rpm with optionals of 2500, 3500 or 5000 rpm. The low speed unit has a no load rating of 600 rpm with optional at 1000.

Weighing only 3¼ lb, the new drill is recommended for use in close corner drilling and for long hours of continuous operation. Available for 115- or 220-volt power lines, its standard equipment includes 2-pole automatic-release trigger switch and locking pin, 3-wire cable and plug 3-jaw geared threaded chuck and key. THE BLACK & DECKER MFG. CO., TOWSON 4, MD.



Drum handling device for fork lift trucks

A new horizontal drum handling device is available and can be attached to any industrial fork truck without removing the fork or making any hydraulic or mechanical connections. Completely automatic, the new device is a self-contained unit that fits over the forks and is fixed to them with two screw-type clamps. One or two standard drums can be picked up, as shown above, by simply lowering the handler over them while the truck is slowly backing away. The rear clamps are spring-loaded and snap under the

(Continued on page 119)

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It Packs More Steel Than Any Other Construction

SEE the keystone shape of the strands? Notice how compactly they fit together? That's the answer. There is *more* steel and *less* fiber in HERCULES Flattened Strand than in any other wire rope construction of equal size. And if you specify wire rope core, you get *still* more strength—7½% more—in the same diameter. That extra strength is often mighty useful—safer, too.

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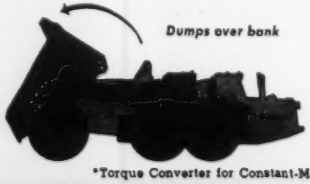

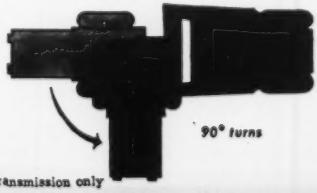

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• • • •

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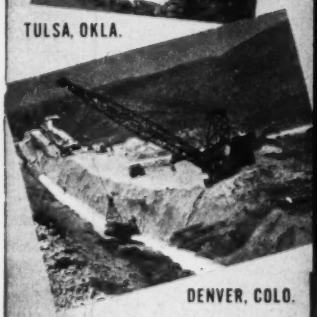

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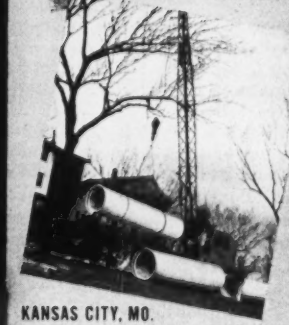

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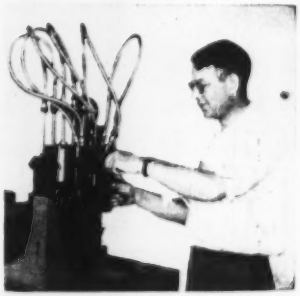

Standardization of Cummins diesel fuel pumps

Testing of fuel pumps used on Cummins fuel systems has been standard-

(Continued on next page)

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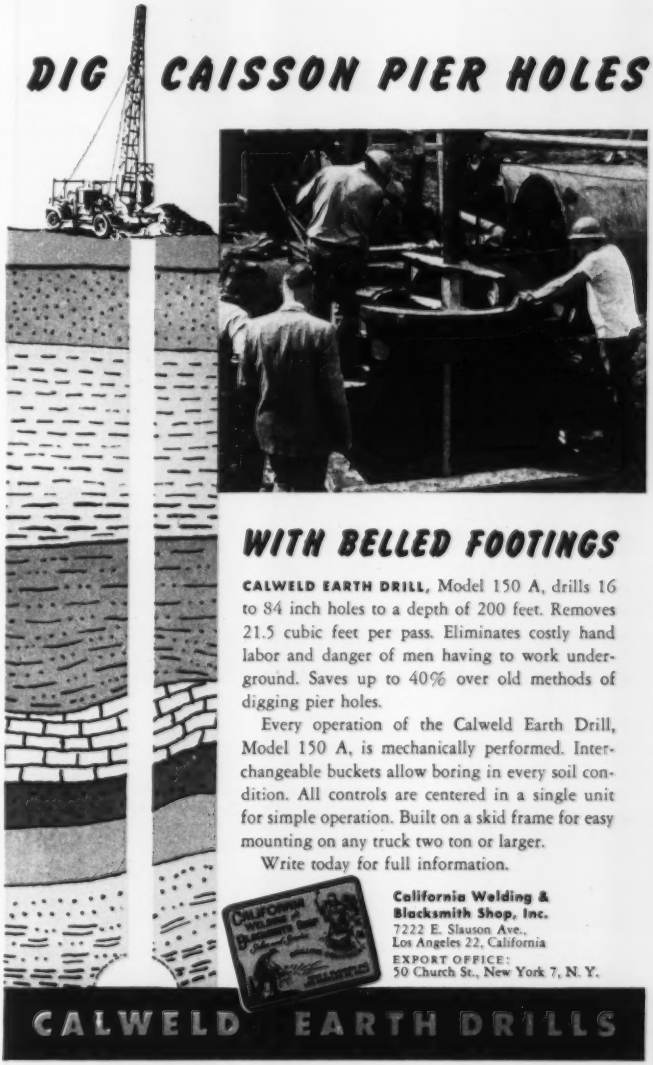

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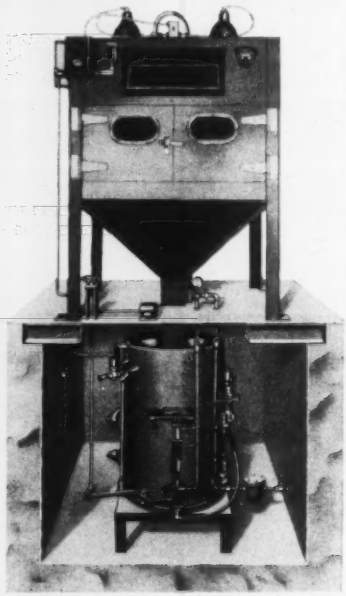

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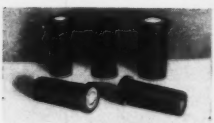

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New products . . .

ized by the development of a new fuel pump test stand shown above. "If the fuel pump is not tested and set accurately, the correct performance of an engine on which the pump is installed cannot be assured," says J. Elwin Gates, Cummins' laboratory technician, making a final adjustment on a DD fuel pump prior to the start of a series of standard tests.

Two models, the single disk and the new DD (double disk) are offered by the company. Cummins' single-plunger, low-pressure, distributor-type fuel pumps measure the fuel charge for all cylinders and assure that each injector receives the proper predetermined amount of fuel at any required engine speed and load within the approved ratings. When these functions are tested by a uniform method, uniform results are assured. CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA.

New Product Briefs

A welder's goggle, featuring removable and adjustable binder-type leather side shields is announced by **American Optical Company, Southbridge, Massachusetts.** By removing the end piece screws, these side shields can be taken off for cleaning, sterilizing or replacing.

A handy new **pocket-sized stapling gun** has been developed by the **Heller Company, 2153-E Superior Avenue, Cleveland, Ohio.** It is said to be the first one-hand stapler, capable of fastening fibre to wood.

Two Dutch concerns are concentrating on production of **Lilliput dredges** for maintenance and improvement of ditches, canals, ponds, etc. With very small draft, they are capable of operating in ditches only 6½ feet wide and 15 inches deep—but they can attain a dredging depth of 6½ feet. Dredging capacity ranges from 353 to 706 cubic feet per hour.

A **concrete mixer** capable of mixing 168 cubic feet of concrete in one batch is now helping build the $400,000,000 U. S. Steel Corporation's new plant at Morrisville, Pennsylvania. Said to be the largest drum type mixer ever manufactured, it was made for the Warner Corporation of Philadelphia, Pa. by the **Worthington Pump and Machinery Corporation, Harrison, New Jersey.** It is capable of filling a 6½ cubic yard Hi-up truck-mounted agitator to capacity with a single batch.

champion 1/2 yard excavator

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Many installations of these unique valves in filtration plants, in sizes from 6" to 36", have given results that cannot be matched by any other type of valve. See what they can do for *your* operation. Send for Catalog No. 45.

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THE CHAPMAN VALVE MFG. CO.
INDIAN ORCHARD, MASSACHUSETTS

MANUFACTURERS' PUBLICATIONS

Composite Catalog—of the Minneapolis-Honeywell Regulator Company describes their principal instruments, control devices and related components. Specifications of approximately 100 measuring and control instruments and valves are outlined including several new designs. MINNEAPOLIS-HONEYWELL REGULATOR COMPANY, BROWN INSTRUMENT DIVISION, WAYNE AND WINDRIM AVENUES PHILADELPHIA 44, PENNSYLVANIA.

Pipe Line Strainers—Here is a 16-page data manual (No. 951) on Zurn pipe line strainers. It describes several types for all purposes ranging in sizes from ½ in. to 36 in., some of which embody new concepts of design and function for making possible continuous production processes. The illustrated manual carries information on the factors to consider in selecting type and size of strainer for a specific application, and the effect of flow rate, screen loading and the viscosity of fluid on pressure drop. J. A ZURN MFG. CO., ERIE, PENNSYLVANIA.

Emergency Power Plants—A new catalog covering emergency power plants has been released by Universal. Citing storms, floods, fires, and mechanical breakdowns as causes of electrical power failure and power shortages resulting in dimouts, the catalog contains specifications for emergency-standby light plants with capacities from 700 to 36,000 watts, in both gasoline and diesel models, air or water-cooled units. Practical applications for emergency power plants are suggested for restaurants, airports, factories, homes, hospitals, theaters and other buildings. UNIVERSAL MOTOR COMPANY, 413 UNIVERSAL DRIVE, OSHKOSH, WISCONSIN.

Highway Cleanup—Bulletin L1028 of the Eimco Corporation describes the use of their Model 104 in clearing highways. It explains how the sturdy, crawler-mounted shovel requires only a width of 6 ft 6 in. as it digs rock, sand, gravel or debric spilled along the highway by rock slides and winter sluff. Several four-color pictures are included testifying to a minimum of traffic holdup. Information is included on the machine's loader transmission, controls, main frame assembly and bucket elevator mechanisms. THE EIMCO CORPORATION, SALT LAKE CITY 10, UTAH.

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MODERATION is counselled by Sen. Herbert H. Lehman (standing) in demanding action to relieve New York City's construction pinch, while (left to right) Howard McSpedon, president, Building Trades Council, AFL, and Herman T. Stichman, another speaker and New York Commissioner of Housing, look on. (N. Y. Daily News photo)

New York yells for relief

Fighting mad over what they termed "stupidity and lack of understanding" on the part of controls adminstrators, New York City construction men two weeks ago heard a call for a congressional investigation of controls, and talked of a mass rally in huge Madison Square Garden to dramatize their troubles.

And they made certain they were heard too—by people who count. In the third of a series of meetings sponsored largely by the city's Building Trades Council (and participated in by employers) they had cornered all of their state's 47-man congressional delegation to hear—loudly and specifically—their charge that controls are throttling their industry to a disastrous standstill.

While Senator Herbert A. Lehman, Congressmen Franklin D. Roosevelt Jr., Jacob Javits, James Donovan, Sidney Fine and others sat unhappily in a union meeting hall under clouds of smoke, some 400 union leaders, workers, employers' representatives and observers (including newspapermen invited by the unions) levelled acid charges at NPA and DPA, and suggested remedies. Some remedies were drastic, others severe.

• **Disaster**—The city's construction industry—normally employing 250,000 men—now has about 22,000 unemployed, and thousands of others have left the city in search of work elsewhere, said Howard McSpedon, Council President.

The reason, said McSpedon (with loud support from the audience) is discrimination against the city—refusal of NPA to recognize that it must continue to function, must continue to build. Because New York isn't designated a defense area, general construction has been grinding to a halt.

Repeated representations to Economic chief Wilson, DPA Administrator Fleischmann, other officials have obtained nothing but polite hearings, dour predictions that there won't be any steel for commercial construction in 1952, endless entanglement in red tape by officials who apparently have no conception of the problems.

"We were solemnly told," said McSpedon, "that if we can find the steel—they'll try to help to get more for construction."

• **We'll get it**—"OK," he added, "we'll get it. From this day on, every man in this council, every member of his family, every employer, will look for scrap steel. We can get it—then we'll see if we get any more."

Vociferously, the audience started to back him up. An ironworker business agent told of an unused elevated structure—containing 2,000 tons of steel—rusting away for more than a year in Brooklyn; another union leader said the city is planning—in the next two months—to resurface Third Avenue for a distance of several miles.

"On that street," he shouted, "is a double line of trolley tracks, stretching for miles. The steel in those tracks weighs 60 pounds to the foot. What's the city going to do with it? We're gonna bury it under 5 inches of asphalt— that's what."

• **Remedies**—The remedies are available, said McSpedon.

Already proposed are: Enactment of legislation to give special relief to New York; enactment of legislation to force defense administrators to follow the law (which leaders said specifically states that the civilian economy must be maintained); establishment of regional consulting bodies.

Also suggested (and leaders said this was under consideration) were such methods as a mass meeting—complete with television—at Madison Square Garden, visits by construction workers and their families to Washington.

One business agent wouldn't be silenced on another remedy—he voiced the threat that unless the city got action, the men would see about "cleaning house" in Congress.

• **How to do it**—The lawmakers got in their innings too—and immediately showed unity on one point, wide divergence on another.

They were solidly together in their protestations that they were behind the effort to get a break for the local industry. But half—led off by Lehman and Roosevelt—were convinced that new legislation isn't the way to do it. "Pressure for change must come on the administrative side," said they.

"Where has that got you so far?" answered a bitter voice from the rear.

Javits and Donovan went the other way—they wanted legislation.

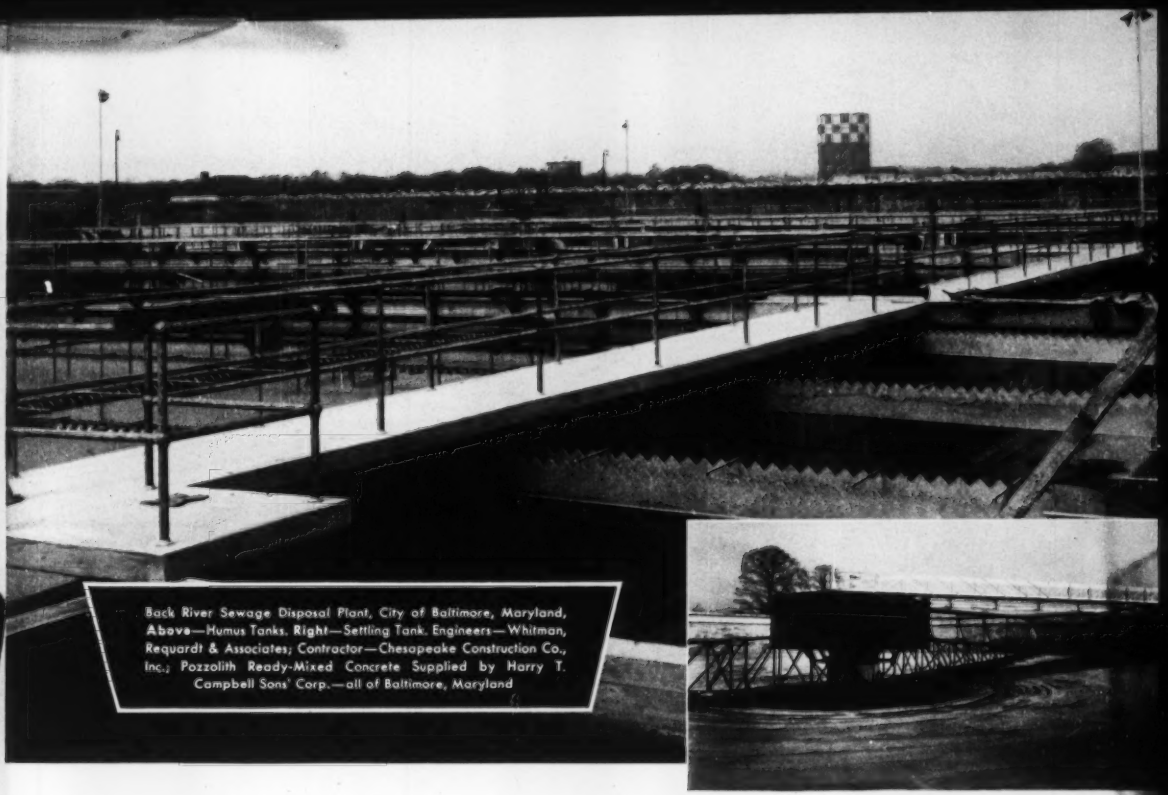
And Javits added another point:

"Maybe the time has come for us to hold a full-dress congressional hearing on this matter," he said. "We should call Wilson and Fleischmann and the others—and your people, to answer these questions, tell us why.

One Democratic congressman couldn't resist blaming the Republicans for most of the trouble. "Wilson is a Republican," he shouted. He was squelched quickly—the crowd was in no mood for politics. "Who appointed Wilson, anyway?" demanded a bricklayer.

• **Results**—What will come of the meetings, in the matter of easing controls, nobody was willing to say.

But this was certain: Labor had moved aggressively into a role of partnership with management in a common cause—in fact in this instance had the most aggressive partner. It is fear —of loss of work and a way of life— that drives labor, but it is also evidence of heads-up leadership.



Back River Sewage Disposal Plant, City of Baltimore, Maryland. **Above**—Humus Tanks. **Right**—Settling Tank. Engineers—Whitman, Requardt & Associates; Contractor—Chesapeake Construction Co., Inc.; Pozzolith Ready-Mixed Concrete Supplied by Harry T. Campbell Sons' Corp.—all of Baltimore, Maryland

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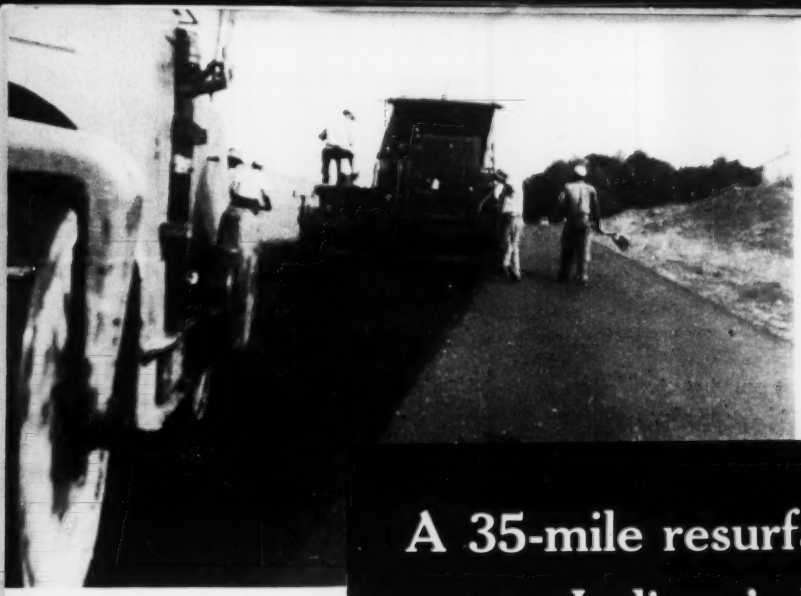
Over 600 Leading Ready-Mix Plants Are Producing Pozzolith Ready-Mixed Concrete

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO



Laying one of the three courses of hot-mix Texaco Asphaltic Concrete, constructed on 35 miles of Indiana Route 46 near Greensburg by the Breslin Construction Company of Louisville, Ky.

A 35-mile resurfacing project on Indiana's Route 46

For resurfacing various sections of the Indiana State Highway System during 1951, two types of Texaco asphalt paving mixes were used. One of the principal differences between the two mixes lay in the asphalt product employed as binder. Both Texaco RC-5 Cutback Asphalt and a 60-70 penetration Texaco Asphalt Cement were used for the purpose on Indiana highways last year.

In the case of the 35-mile section of Route 46 illustrated here, 60-70 penetration asphalt served as binder in the new hot-mix Texaco Asphaltic Concrete pavement. The pavement was laid in three courses, each one inch thick. The first two were binder courses and the third, the wearing surface.

In Indiana and throughout the rest of the country east of the Rockies, Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils perform an all-around service for the road builder. For heavy-duty paving, low-cost surfacing, undersealing concrete, joint-filling, surface-treatment and dust-laying, there is a Texaco asphalt product exactly suited to the purpose. Behind these products is almost 50 years of experience in refining asphalt from carefully selected crudes.

Faithfully yours

50 for Fifty Years

Two helpful booklets covering all types of asphalt construction can be obtained without cost or obligation by writing our nearest office.

Completed section of resilient, heavy-duty Texaco Asphaltic Concrete pavement on Route 46.

Asphalt plant of the Breslin Construction Company, which turned out approximately 70,000 tons of asphalt mix for this project.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

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